



# STIC Search Report

EIC 1700

STIC Database Tracking Number: 1400001

TO: Hoa V Le  
Location: REM 9D61  
Art Unit : 1752  
December 27, 2004

Case Serial Number: 10/656021

From: Les Henderson  
Location: EIC 1700  
REM 4B28 / 4A30  
Phone: 571-272-2538

[Leslie.henderson@uspto.gov](mailto:Leslie.henderson@uspto.gov)

## Search Notes

Please let me know if you need this searched further. The structures in the registry files have been saved and can be retrieved if needed.

Les





# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact **the EIC searcher or contact:**

**Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28**

## **Voluntary Results Feedback Form**

➤ *I am an examiner in Workgroup:*  *Example: 1713*  
➤ *Relevant prior art found, search results used as follows:*

102 rejection  
 103 rejection  
 Cited as being of interest.  
 Helped examiner better understand the invention.  
 Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

Foreign Patent(s)  
 Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

Results verified the lack of relevant prior art (helped determine patentability).  
 Results were not useful in determining patentability or understanding the invention.

**Comments:**

Drop off or send completed forms to EIC1700 REMSEN 4B28



## SEARCH REQUEST FORM

## Scientific and Technical Information Center

Requester's Full Name: HOA VAN LE Examiner #: 60626 Date: 10 Dec. 2004  
 Art Unit: 1752 Phone Number 30571-272-1332 Serial Number: 10/656,021  
 Mail Box and Bldg/Room Location: 912A Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): please see the attachment

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for an imageable composition (by light) in claims  
 1-5 especially with the elected species and their chemical structures  
 and 17-19

Thank you

SCIENTIFIC REFERENCE BR  
 Sci. & Tech. Info. Cntr

DEC 10

Pat. & T.M. Office

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher:	<u>LH</u>	NA Sequence (#)	STN <u>\$1,244,01 plus</u>
Searcher Phone #:	<u>571-272-2538</u>	AA Sequence (#)	Dialog _____
Searcher Location:	<u>Rem 413D</u>	Structure (#)	<u>5</u> Questel/Orbit _____
Date Searcher Picked Up:		Bibliographic	Dr.Link _____
Date Completed:	<u>12/27/04</u>	Litigation	Lexis/Nexis _____
Searcher Prep & Review Time:	<u>60</u>	Fulltext	Sequence Systems _____
Clerical Prep Time:		Patent Family	WWW/Internet _____
Online Time:	<u>480</u>	Other	Other (specify) _____

Appl. No. 10/656,021  
 Amdt. dated October 15, 2004  
 Reply to Office action of September 28, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A direct light imaging compound composition comprising:

a matrix, and *with selected species of ultraviolet curable acrylates*  
*an antenna, with selected species of silicon 2,3 naphthalocyanine*  
*wherein the antenna comprises a compound selected from the group*  
*consisting of compounds comprising a phthalocyanine*  
*chromophore and compounds comprising a naphthalocyanine*  
*chromophore, and*

*wherein the antenna is dissolved in the matrix.*

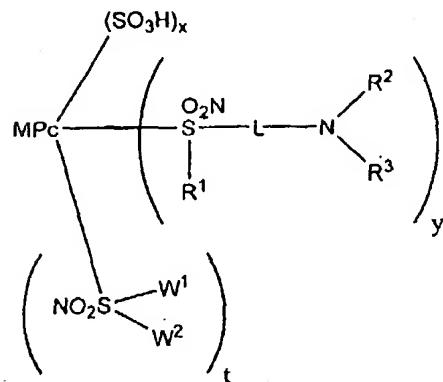
2. (Currently amended) The compound composition of claim 1 further comprising:

*a color former, and with selected species of 2'-amino-3-methyl-6'-  
 (diethyl amino) fluoran*  
*an activator, with selected species of bisphenol A*  
*wherein one of the activator and the color former is soluble in the cured*

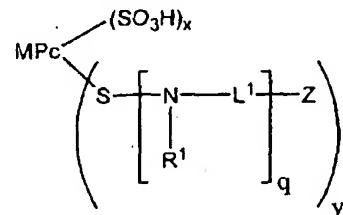
*matrix or uncured matrix precursor at ambient conditions;* *chemical*  
*wherein the soluble of the activator and the color former is structure is on pag*  
*dissolved in the matrix; and* *11 of 22 of fax pag*  
*wherein the other of the activator and the color former is substantially on 10/15/04*  
*uniformly distributed in the matrix.*

3. (Currently amended) The compound composition of claim 1 where in the antenna comprises a compound chosen from the group consisting of (A) silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide); (B) derivatives of 2,3 naphthalocyanine; (C) derivatives of silicon phthalocyanine; (D) derivatives of benzophthalocyanines; (E)

Appl. No. 10/656,021  
 Amdt. dated October 15, 2004  
 Reply to Office action of September 28, 2004



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R<sup>1</sup>, R<sup>2</sup>, W<sup>1</sup>, and W<sup>2</sup> are independently H or optionally substituted alkyl, aryl, or aralkyl; R<sup>3</sup> is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R<sup>1</sup> independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L<sup>1</sup> independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; and (G) 800NP.

4. (Currently amended) The compound composition of claim 1 wherein the antenna is tuned to readily absorb laser radiation of a predetermined frequency.

**Appl. No. 10/656,021  
Amdt. dated October 15, 2004  
Reply to Office action of September 28, 2004**

5. (Currently Amended) The compound composition of claim 1 wherein the antenna is tuned to readily absorb infrared radiation of a predetermined frequency.

6. (Withdrawn) A method for preparing a direct imaging material, the method comprising:

providing a binder, a dye, a color developer, and an antenna,  
wherein the antenna is soluble in the binder and selected from the group  
consisting of compounds comprising a phthalocyanine  
chromophore and compounds comprising a naphthalocyanine  
chromophore;

wherein the dye changes color when reacted with the color developer; and  
wherein one of the dye and the color developer is soluble in the binder at  
ambient conditions;

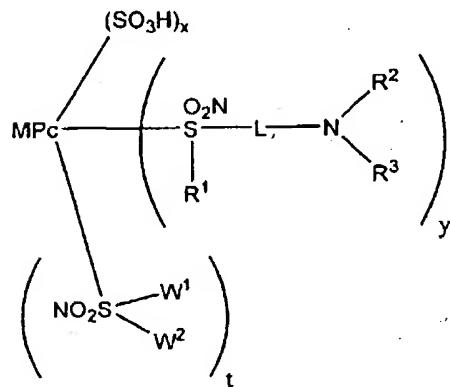
dissolving the antenna and the binder soluble compound in the binder; and  
substantially uniformly distributing the other of the dye and the color  
developer compound in the binder.

7. (Withdrawn) The method of claim 6 wherein the antenna is tuned to  
readily absorb infrared radiation of a predetermined frequency.

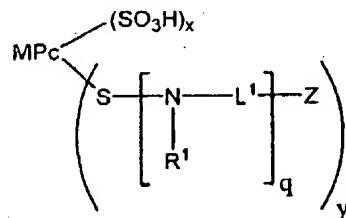
8. (Withdrawn) The method of claim 6 wherein the antenna is tuned to  
readily absorb laser radiation of a predetermined frequency.

9. (Withdrawn) The method of claim 6 wherein the antenna is selected from  
the group consisting of (A) silicon 2,3 naphthalocyanine bis(trihexylsilyloxide); (B)  
derivatives of 2,3 naphthalocyanine; (C) derivatives of silicon phthalocyanine; (D)  
derivatives of benzophthalocyanines; (E)

Appl. No. 10/656,021  
 Amdt dated October 15, 2004  
 Reply to Office action of September 28, 2004



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R<sup>1</sup>, R<sup>2</sup>, W<sup>1</sup>, and W<sup>2</sup> are independently H or optionally substituted alkyl, aryl, or aralkyl; R<sup>3</sup> is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R<sup>1</sup> independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L<sup>1</sup> independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; and (G) 800NP.

10. (Withdrawn) An image recording medium, the medium comprising:  
 a substrate; and  
 an imaging composition comprising, an antenna and a solvent,  
 wherein the antenna comprises a compound selected from the group  
 consisting of compounds comprising a phthalocyanine.

**Appl. No. 10/656,021  
Amdt dated October 15, 2004  
Reply to Office action of September 28, 2004**

chromophore and compounds comprising a naphthalocyanine chromophore, and

wherein the antenna is dissolved in the solvent.

11. (Withdrawn) The image recording medium of claim 10 wherein the imaging composition further comprises:

a dye; and a color initiator;

wherein the dye changes color when mixed with the color initiator;

wherein one of the color initiator and the dye is soluble in the solvent at ambient conditions;

wherein the other of the color initiator and the dye is substantially insoluble in the solvent at ambient conditions;

wherein the substantially insoluble component is substantially uniformly distributed in the solvent; and

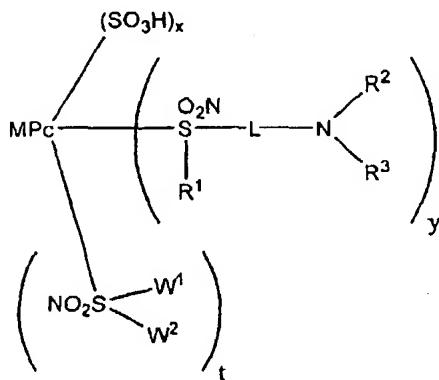
wherein the imaging composition is directly or indirectly applied to the substrate.

12. (Withdrawn) The medium of claim 11 wherein the antenna readily absorbs infrared radiation of a predetermined frequency.

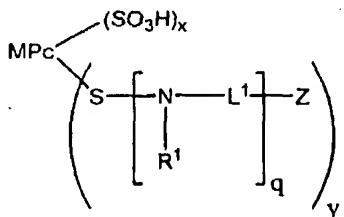
13. (Withdrawn) The medium of claim 11 wherein the antenna readily absorbs laser radiation of a predetermined frequency.

14. (Withdrawn) The medium of claim 11 wherein the antenna is selected from the group consisting of (A) silicon 2,3 naphthalocyanine bis(trihexylsilyloxide); (B) derivatives of 2,3 naphthalocyanine; (C) derivatives of silicon phthalocyanine; (D) derivatives of benzophthalocyanines; (E)

Appl. No. 10/656,021  
 Amdt. dated October 15, 2004  
 Reply to Office action of September 28, 2004



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R<sup>1</sup>, R<sup>2</sup>, W<sup>1</sup>, and W<sup>2</sup> are independently H or optionally substituted alkyl, aryl, or aralkyl; R<sup>3</sup> is an aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4; (F)



where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R<sup>1</sup> independently is H or an optionally substituted alkyl, aryl, or aralkyl; each L<sup>1</sup> independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; and (G) 800NP.

15. (Withdrawn) The medium of claim 11 wherein the substrate comprises paper.

16. (Withdrawn) The medium of claim 11 wherein the substrate comprises a compact disc or DVD.

**Appl. No. 10/656,021**  
**Amtd. dated October 15, 2004**  
**Reply to Office action of September 28, 2004**

17. (Original) An imaging means, the means comprising:
  - a means for absorbing energy;
  - a means for forming color;
  - a means for initiating a color change in the color forming means;
  - a means for binding the absorbing means, the color forming means, and the initiating means;

wherein the absorbing means is dissolved in the binder;

wherein one of the means for forming color and the means for initiating is soluble in the means for binding at ambient conditions;

wherein the other of the means for forming color and the means for initiating is substantially insoluble in the means for binding at ambient conditions; and

wherein the insoluble component is substantially uniformly distributed in the binder.
18. (Original) The means of claim 17 wherein the means for absorbing readily absorbs laser radiation of a predetermined frequency.
19. (Original) The means of claim 18 wherein the means for absorbing readily absorbs infrared radiation of a predetermined frequency.

Appl. No. 10/656,021  
Amdt. dated September 10, 2004  
Reply to Office action of August 12, 2004

REMARKS/ARGUMENTS

I. RESTRICTION REQUIREMENT

Applicant received the Restriction Requirement of August 12, 2004, in which the Examiner restricted the claims into four groups. Merely to expedite prosecution, Applicant elects, with traverse, Group 1 (claims 1-5), withdraw claims 6-16, and may file a divisional application for the withdrawn claims.

With respect to claims 17-19, Applicant asserts that claims 17-19 should be examined with claims 1-5. The Examiner asserts that claims 17-19 should be classified and examined in class 396, subclass 225+ (PHOTOGRAPHY/EXPOSURE CONTROL CIRCUIT/COLOR TEMPERATURE COMPENSATION OR DETECTION) rather than class 430 (RADIATION IMAGERY CHEMISTRY: PROCESS, COMPOSITION, OR PRODUCT THEREOF). Applicant respectfully disagrees.

The elements of claims 17-19 are written in § 112, para. 6 "means plus function" form. Thus, when examining the claims, the Examiner must construe the claims to cover "the corresponding structure [and] material . . . described in the specification and equivalents thereof." 35 U.S.C. § 112, para. 6. Although, during examination, Examiners are to give claim terms their broadest reasonable construction, that includes adhering to the mandate of 35 U.S.C. § 112, para. 6 that means plus function terms be interpreted to cover the structures disclosed in the specification and their equivalents, not every conceivable means for performing the named function. *In re Donaldson*, 16 F.3d 1189, 1194, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994) (*en banc*). In *Donaldson*, the Board interpreted a "means-plus-function" claim term as broadly as possible (*i.e.*, to encompass every means for performing the recited function) rather than evaluating the claim term to cover the means disclosed in the specification (as required by § 112, ¶ 6). Based upon that interpretation, the Board found the claim at issue obvious in light of the prior art. The Federal Circuit reversed, stating, "the 'broadest reasonable interpretation' that an examiner may give means-plus-function language is that statutorily mandated in [35 U.S.C. § 112] paragraph six." *Id.*

Appl. No. 10/656,021  
 Amdt. dated September 10, 2004  
 Reply to Office action of August 12, 2004

Thus, when reading claims 17-19 in light of the structures and materials disclosed in the specification, it becomes clear that claims 17-19 are analogous to (although not necessarily identical to)<sup>1</sup> claims 1-5. For example, claim 2 and claim 17, when their chemical components are compared side-by-side, contain analogous elements:

CLAIM 2	CLAIM 17
"an antenna" (incorporated from independent claim 1)	"means for absorbing energy"
"a color former"	"means for forming color"
"an activator"	"means for initiating a color change"
"a matrix" (incorporated from independent claim 1)	"means for binding the absorbing means"

Therefore, Applicant respectfully asserts that claims 17-19 are within the same classification as claims 1-5. Thus, no extra searching will be required and claims 17-19 should be examined along with claims 1-5.

## II. ELECTION OF SPECIES

The Examiner has stated that claims 1-19 are generic to a plurality of patentably distinct species. With respect to the various chemical ingredients recited in the claims, Applicant elects as follows:

matrix – ultraviolet curable acrylates  
 antenna – silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide)  
 color former – 2'-anilino-3' methyl-6'-(dibutylamino) fluoran  
 activator – bisphenol A

This election is not an admission by the Applicant that the recited chemical ingredients of the claims are limited to the elected species, but merely an election of species as required by the Examiner. Applicant asserts that all of claims 1-5 and 17-19 are generic to this species.

<sup>1</sup> By stating that claims 1-5 and 17-19 are analogous, Applicant does not intend to indicate that any of claims 1-5 or their individual elements are necessarily coextensive with any of claims 17-19 or their elements or vice versa. However, by evaluating claims 17-19 in light of § 112, para. 6, it is clear that claims 1-5 and 17-19 are within the same art unit and should be examined together.

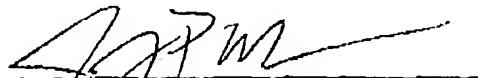
Appl. No. 10/656,021  
Amdt. dated September 10, 2004  
Reply to Office action of August 12, 2004

Further, the Examiner requires that the Applicant "identif[y] the elected chemical structure antenna is either (1) infrared radiation or (2) laser radiation absorption." Applicant assumes that the Examiner wants to know whether the elected species absorbs infrared radiation or laser radiation. Applicant submits that laser radiation and infrared radiation are not mutually exclusive. The elected antenna (silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide)) absorbs infrared radiation whether from a laser or otherwise.

### III. CONCLUSION

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If any fees or time extensions are inadvertently omitted or if any fees have been overpaid, please appropriately charge or credit those fees to Hewlett-Packard Company Deposit Account Number 08-2025 and enter any time extension(s) necessary to prevent this case from being abandoned.

Respectfully submitted,



Jeremy P. Welch  
PTO Reg. No. 52,348  
CONLEY ROSE, P.C.  
(713) 238-8000 (Phone)  
(713) 238-8008 (Fax)  
ATTORNEY FOR APPLICANT

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
Legal Dept., M/S 35  
P.O. Box 272400  
Fort Collins, CO 80527-2400

**Appl. No. 10/656,021**  
**Amdt. dated October 15, 2004**  
**Reply to Office action of September 28, 2004**

#### **REMARKS/ARGUMENTS**

##### **RESTRICTION/ELECTION REQUIREMENT**

Applicant received the Restriction/Election Requirement of September 28, 2004, in which the Examiner responded to Applicant's Response of September 10, 2004, and further clarified his election requirement. Applicant files the instant response.

As stated in his first Response, these elections are not admissions by the Applicant that the claims are limited to the elected species, but instead, these elections are made as required by the Examiner to expedite prosecution. All of claims 1-5 and 17-19 are generic to the elected species.

For clarity, Applicant has used the Examiner's section numbering system in responding to the Examiner's concerns and requirements (e.g., I., II., III. 1.)

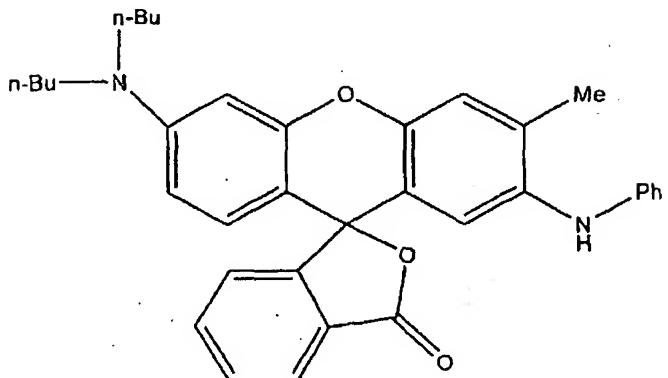
I. With respect to the Examiner's statements regarding Applicant's use of the term "compound," Applicant has amended claims 1-5 to recite a "composition" rather than a compound. Applicant hopes that this amendment removes any concerns the Examiner has regarding the Applicant's use of the term "compound." No substantive change in the scope of the claims is intended.

With respect to the Applicant's use of the term "precursor," Applicant has amended claim 2 to recite the "cured matrix and uncured matrix" rather than the "matrix and matrix precursor." Applicant respectfully believe that he has overcome the Examiner's objection to use of the term "precursor." No substantive change in the scope of the claims is intended.

With respect to the Applicant's use of the term "derivative," Applicant submits that the term "derivative" has a meaning to one of ordinary skill in the art, namely, "an organic compound containing a structural radical similar to that from which it is derived, e.g., benzene derivatives containing the benzene ring." Grant, Julius, ed., HACKH'S CHEMICAL DICTIONARY 203 (1969) (attached as Exhibit A). Thus, Applicant believes the use of the term "derivative" in the claims is proper.

II. With respect to the elected color former "2'-anilino-3'-methyl-6-(dibutylamino) fluoran," the chemical structure, as set out in Formula 7 of the application is:

Appl. No. 10/656,021  
 Amdt. dated October 15, 2004  
 Reply to Office action of September 28, 2004

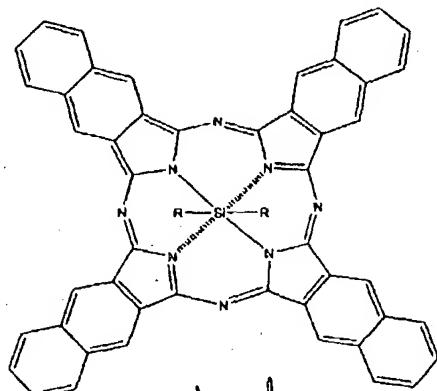


For the purposes of this election, the 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran may be uniformly distributed in the matrix.

III. 1. The Examiner has stated that "many possible chemical ingredients of matri[c]es" are broadly disclosed in the art and that "Applicant is required ... to elect a single disclosed chemical ingredient species or matri[c]es for an initiation of a search... . Applicant is requested and required to show or provide the exact chemical structure of the elected chemical ingredient species... ." Applicant originally elected the species of ultraviolet curable acrylates. Applicants respectfully assert that the recitation of an exact chemical structure is neither necessary nor proper. The composition of the matrix, in and of itself, is not critical to the present invention. Additionally, the matrices disclose by the Applicant in the present application are purchased from third parties and their compositions are proprietary. For example, page 1 of the MSDS for Sartomer CN294 discloses only that it contains acrylated polyester oligomers, acrylic esters, and low viscosity acrylic oligomers (attached as Exhibit B). It does not disclose which oligomers and esters are present nor in what amount. Thus, for at least this reason, Applicant believes that his election of ultraviolet curable acrylates is proper and sufficient.

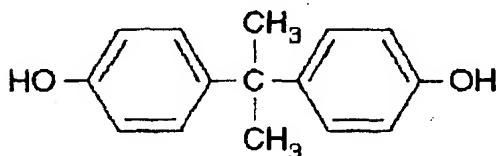
**Appl. No. 10/656,021**  
**Amdt dated October 15, 2004**  
**Reply to Office action of September 28, 2004**

**III. 2.** With respect to Applicant's election of silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide), the chemical structure, as set forth in the application, is as follows:



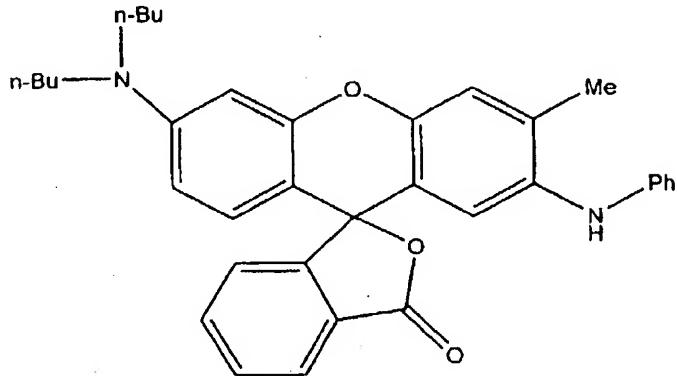
where R=  $-\text{O}-\text{Si}-(\text{CH}_2(\text{CH}_2)_4\text{CH}_3)_3$ . This antenna absorbs laser radiation.

**III. 3. and 4.** With respect to the activator, both uniformly distributed and soluble, the chemical structure of Applicant's previously elected activator, bisphenol A, is set forth below:



**III. 5. and 6.** With respect to the elected color former "2'-anilino-3'-methyl-6'-(dibutylamino) fluoran," the chemical structure, as set out in Formula 7 of the application is:

Appl. No. 10/656,021  
 Amdt. dated October 15, 2004  
 Reply to Office action of September 28, 2004



#### CONCLUSION

Applicant believes he has fully responded to the instant Restriction and/or Election Requirement. Applicant respectfully requests that the Examiner examine the case and a timely Notice of Allowance be issued in this case.

It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a); and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

Jeremy P. Welch  
 PTO Reg. No. 52,348  
 CONLEY ROSE, P.C.  
 (713) 238-8000 (Phone)  
 (713) 238-8008 (Fax)  
 ATTORNEY FOR APPLICANT

HEWLETT-PACKARD COMPANY  
 Intellectual Property Administration  
 Legal Dept., M/S 35  
 P.O. Box 272400  
 Fort Collins, CO 80527-2400



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER FOR PATENTS  
 P.O. Box 1450  
 Alexandria, Virginia 22313-1450  
 www.uspto.gov

## \*BIBDATASHEET\*

Bib Data Sheet

CONFIRMATION NO. 8140

SERIAL NUMBER 10/656,021	FILING DATE 09/05/2003 RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. 200312226-1
-----------------------------	-----------------------------------	--------------	------------------------	---------------------------------------

## APPLICANTS

Makarand P. Gore, Corvallis, OR;

\*\* CONTINUING DATA \*\*\*\*\* *le*\*\* FOREIGN APPLICATIONS \*\*\*\*\* *le*

## IF REQUIRED, FOREIGN FILING LICENSE GRANTED

\*\* 11/29/2003

Foreign Priority claimed	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY OR	SHEETS DRAWING 1	TOTAL CLAIMS 19	INDEPENDENT CLAIMS 4
35 USC 119 (a-d) conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after allowance				
Verified and Acknowledged	<i>Asha Venk</i> Examiner's Signature	Initials			

## ADDRESS

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

P.O. Box 272400

Fort Collins, CO

80527-2400

## TITLE

Compositions, systems, and methods for imaging

FILING FEE RECEIVED 834	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees ( Filing ) <input type="checkbox"/> 1.17 Fees ( Processing Ext. of time ) <input type="checkbox"/> 1.18 Fees ( Issue ) <input type="checkbox"/> Other _____
-------------------------------	---	--

## COMPOSITIONS, SYSTEMS, AND METHODS FOR IMAGING

## Background

**[0001]** Materials that produce color change upon stimulation with energy (e.g., light or heat) may have possible applications in imaging. For example, such materials may be found in thermal printing papers and instant imaging films. Generally, the materials and compositions known so far may require a multifilm structure and further processing to produce an image (e.g., instant camera films). And in the case of facsimile and thermal head media, high energy input of greater than 1-5 J/cm<sup>2</sup> is needed to achieve good images. The compositions in multifilm media may require control of diffusion of color-forming chemistry and further processing, and are in separate phases and layers. Many thermal and facsimile paper coatings consist of coatings prepared by applying fine dispersions of more than two components. The components mix and react upon application of energy, resulting in a colored material. For the necessary mixing, the particles may need to contact across three or more phases or layers and merge into a new phase. Because of these multiple phases and layers, high energy is required to perform this process. For example, a relatively powerful carbon dioxide laser with an energy density of 3 J/cm<sup>2</sup> at times of much greater than 100  $\mu$ s may be needed to produce a mark. In some instances, this high energy application may cause damage to the imaging substrate.

**[0002]** In many situations, it may be desirable to produce a visible mark more efficiently using either a less intense, less powerful, and/or shorter energy application. Therefore, there is a need for fast marking coatings, possibly composed of fewer than three phases and in single layer. One method may be to provide a binder, a dye, a color developer, and an antenna, wherein the dye changes color when reacted with the color developer, wherein one of the dye and the color developer is soluble in the binder at ambient conditions, wherein the antenna and the binder soluble compound are dissolved in the binder; and the other of the dye and the color developer compound are substantially uniformly

distributed in the binder. In such systems, if the antenna is not substantially thermally and light stable, the ability to mark may be lost or diminished, *i.e.*, due to absorption of ambient energy (e.g., sunlight, artificial light, and/or ambient heat). The antenna may lose its ability to absorb energy and deliver it for formation of an image. For example, even antennae which have previously been considered stable (*i.e.*, with an extinction coefficient greater than 100,000, or less than 20% loss in absorption, after exposure to light or heat stress) may be highly susceptible to ambient energy and may show diminished light marking ability after exposure to ambient energy.

**[0003]** In addition, the formed image may fade if it has not been developed with sufficient energy. For example, many markings may fade after exposure to 40°C/80% humidity after three days. This fading may be due to the inability of the antenna to deliver sufficient energy to the dye, especially due to effect of exposure to light or heat. Heretofore, it may be desirable to produce a system which solves one or more of the foregoing problems.

#### Summary

**[0004]** Disclosed herein are imaging materials and methods of making imaging materials. The materials disclosed herein may include an antenna which comprises a compound selected from the group consisting of compounds comprising a phthalocyanine chromophore and compounds comprising a naphthalocyanine chromophore.

#### Brief Description of the Drawings

**[0005]** For a detailed description of embodiments of the invention, reference will now be made to the accompanying drawings in which:

**[0006]** Figure 1 shows a method of preparing an imaging material according to an embodiment of the present invention.

**[0007]** Figure 2 shows an imaging medium according to an embodiment of the present invention.

### Notation and Nomenclature

**[0008]** Certain terms are used throughout the following description and claims to refer to particular system components. As one skilled in the art will appreciate, companies may refer to components by different names. This document does not intend to distinguish between components that differ in name but not function. In the following discussion and in the claims, the terms "including" and "comprising" are used in an open-ended fashion, and thus should be interpreted to mean "including, but not limited to . . ." The term "leuco dye" is a color forming substance which is colorless or one color in a non-activated state and produces or changes color in an activated state. As used herein, the term "activator" is a substance which reacts with a leuco dye and causes the leuco dye to alter its chemical structure and change or acquire color. By way of example only, activators may be phenolic or other proton donating species which can effect this change. The term "antenna" means a radiation absorbing compound. The antenna readily absorbs a desired specific wavelength of the marking radiation, and transfers energy to cause marking.

### Detailed Description

**[0009]** The following discussion is directed to various embodiments of the invention. The embodiments disclosed should not be interpreted, or otherwise used, as limiting the scope of the disclosure, including the claims. In addition, one skilled in the art will understand that the following description has broad application, and the discussion of any embodiment is meant only to be exemplary of that embodiment, and is not intended to intimate that the scope of the disclosure, including the claims, is limited to that embodiment.

**[0010]** Embodiments of the present invention include coatings that result in markings which are substantially stable in ambient and near ambient conditions. The materials used to produce markings upon stimulation by energy may include a color-former such as a fluoran leuco dye and an activator such as sulphonylphenol dispersed in a matrix such as radiation-cured acrylate oligomers

and monomers and applied to a substrate. In some embodiments, either the leuco dye or the activator may be substantially insoluble in the matrix at ambient conditions. A substantially stable radiation energy absorber (*i.e.*, antenna) that functions to absorb energy and deliver it to the reactants is also present in this coating. Energy may then be applied by way of, for example, a laser or infrared light. Upon application of the energy, either the activator, the color-former, or both may become heated and mixed which causes the color-former to become activated and a mark to be produced.

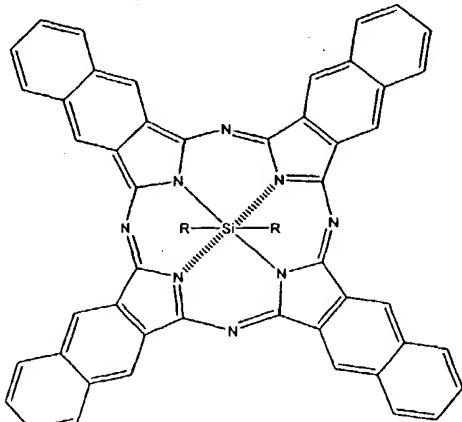
**[0011]** Referring now to the embodiments illustrated in Figure 2, there is shown imaging medium 100, energy 110, substrate 120, imaging composition 130, and suspended particles 140. Imaging medium 100 may comprise a substrate 120. Substrate 120 may be any substrate upon which it is desirable to make a mark, such as, by way of example only, paper (*e.g.*, labels, tickets, receipts, or stationary), overhead transparencies, or the labeling surface of an optical disk such as a CD-R/RW/ROM or DVD-R/RW/ROM.

**[0012]** Imaging composition 130 may comprise a matrix, an activator, an antenna, and a color forming dye. The activator and the color forming dye, when mixed, may change color. Either of the activator and the color forming dye may be soluble in the matrix. The other component (activator or color forming dye) may be substantially insoluble in the matrix and may be suspended in the matrix as uniformly distributed particles 140. The imaging composition 130 may be applied to the substrate via any acceptable method, such as, by way of example only, rolling, spraying, or screen printing.

**[0013]** Energy 110 may be directed imagewise to imaging medium 100. The form of energy may vary depending upon the equipment available, ambient conditions, and desired result. Examples of energy which may be used include IR radiation, UV radiation, x-rays, or visible light. The antenna may absorb the energy and heat the imaging composition 130. The heat may cause suspended particles 140 to reach a temperature sufficient to cause the interdiffusion of the color forming species initially present in the particles (*e.g.*, glass transition temperatures ( $T_g$ ) or melting temperatures ( $T_m$ ) of particles 140 and matrix). The

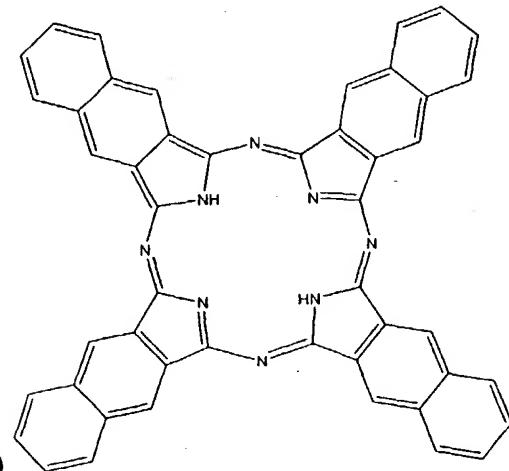
activator and dye may then react to form a color. Without limitation, the antenna may be selected from the following compounds:

(A) silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide) (Formula 1) (Aldrich 38,993-5, available from Aldrich, P.O. Box 2060, Milwaukee, WI 53201), and matrix soluble derivatives of 2,3 naphthalocyanine (Formula 2)



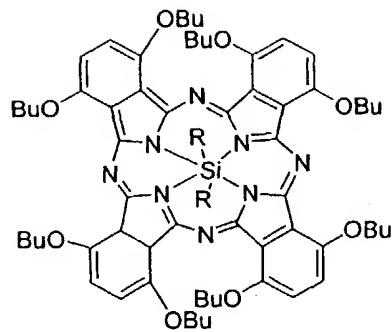
(1)

where R=  $-\text{O}-\text{Si}-(\text{CH}_2\text{CH}_2)_4\text{CH}_3$ ;

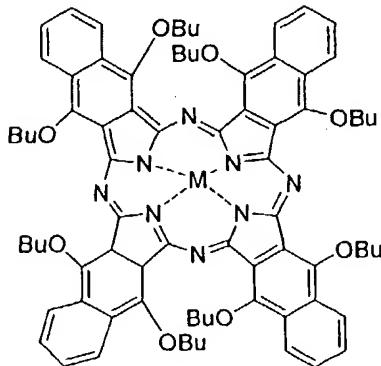


(2)

(B) matrix soluble derivatives of silicon phthalocyanine, described in *Rodgers, A.J. et al.*, 107 J. PHYS. CHEM. A 3503-3514 (May 8, 2003), and matrix soluble derivatives of benzophthalocyanines, described in *Aoudia, Mohamed*, 119 J. AM. CHEM. SOC. 6029-6039 (July 2, 1997), (substructures illustrated by Formula 3 and Formula 4, respectively):



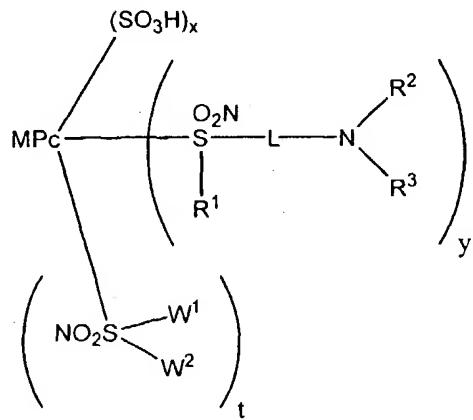
(3) R= Trihexylsilyloxy



(4)

where M is a metal, and;

(C) compounds such as those shown in Formula 5 (as disclosed in U.S. Patent No. 6,015,896)

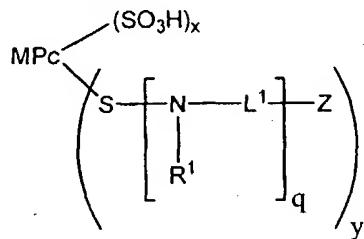


(5)

where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; R<sup>1</sup>, R<sup>2</sup>, W<sup>1</sup>, and W<sup>2</sup> are independently H or optionally substituted alkyl, aryl, or aralkyl; R<sup>3</sup> is an

aminoalkyl group; L is a divalent organic linking group; x, y, and t are each independently 0.5 to 2.5; and (x+y+t) is from 3 to 4;

(D) compounds such as those shown in Formula 6 (as disclosed in U.S. Patent No. 6,025,486)

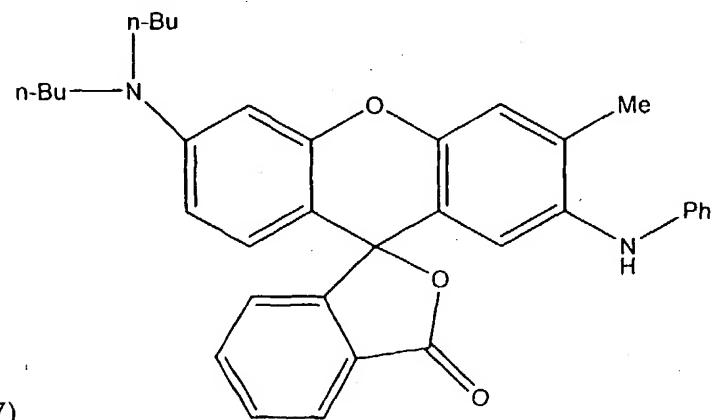


(6)

where M is a metal or hydrogen; Pc is a phthalocyanine nucleus; each R<sup>1</sup> independently is H or an optionally substituted alkyl, aryl, or aralkyl; L<sup>1</sup> independently is a divalent organic linking group; Z is an optionally substituted piperazinyl group; q is 1 or 2; x and y each independently have a value of 0.5 to 3.5; and (x+y) is from 2 to 5; or

(E) 800NP (a proprietary dye available from Avecia, PO Box 42, Hexagon House, Blackley, Manchester M9 8ZS, England).

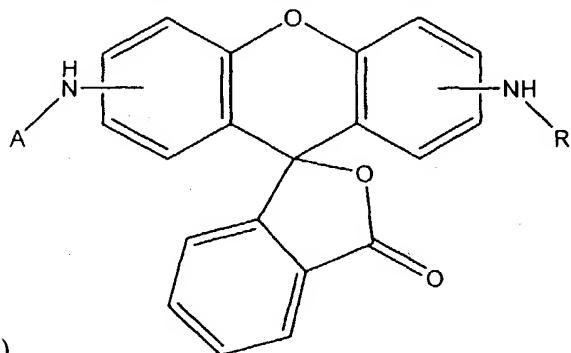
**[0014]** The activator (e.g., bisphenol-A) and color-forming dye 90 (e.g., 2'-anilino-3'-methyl-6'-(dibutylamino)fluoran, the structure of which is set forth below as Formula 7)



(7)

may act in tandem to produce a mark. The activator and dye may be any two substances which when reacted together produce a color change. When reacted, the activator may initiate a color change in the dye or develop the dye.

One of the activator and the dye may be soluble in the matrix (e.g., lacquer 30) at ambient conditions. The other may be substantially insoluble in the lacquer at ambient conditions. By "substantially insoluble," it is meant that the solubility of the other in the lacquer at ambient conditions is so low, that no or very little color change may occur due to reaction of the dye and the activator at ambient conditions. Although, in the embodiments described above, the activator may be dissolved in the lacquer and the dye remains suspended as a solid in the matrix at ambient conditions, it is also acceptable that the color former may be dissolved in the matrix and the activator may remain as a suspended solid at ambient conditions. Activators may include, without limitation, proton donors and phenolic compounds such as bisphenol-A and bisphenol-S. Color formers may include, without limitation, leuco dyes such as fluoran leuco dyes and phthalide color formers as described in "The Chemistry and Applications of Leuco Dyes", Muthyalu, Ramiah, ed., Plenum Press (1997) (ISBN 0-306-45459-9), incorporated herein by reference. Examples of acceptable fluoran leuco dyes comprise the structure shown in Formula 8:



(8)

where A and R are aryl or alkyl groups.

**[0015]** Lacquer 30 may be any suitable matrix for dissolving and/or dispersing the activator, antenna, and color former. Acceptable lacquers may include, by way of example only, UV curable matrices such as acrylate derivatives, oligomers and monomers, with a photo package.

Example 1

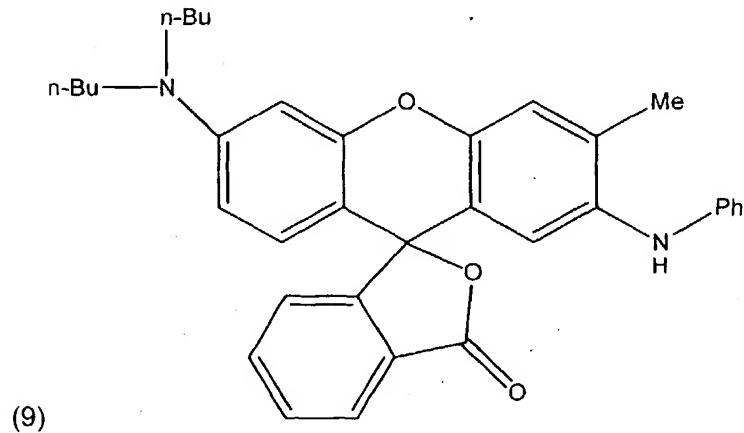
**[0016]** Referring to the embodiments of Figure 1, which shows a method for preparing an imaging solution in accordance with embodiments of the present

invention, the method may comprise an activator melt 10, an activator/antenna solution 20, a UV curable lacquer solution 30, a lacquer/antenna/activator solution 40, and a two phase UV curable paste 50.

**[0017]** In accordance with the embodiments illustrated in Figure 1, 2 grams of dibenzyl oxalate was heated to melting (about 85° C). 20 grams of activator bisphenol-A and one gram of antenna silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide) (Formula 1), were dissolved in the melted dibenzyl oxalate. The activator/antenna solution 20 was cooled and ground into a fine powder 70.

**[0018]** Five grams of the ground activator/antenna powder 70 was dissolved in 15.3 g Nor-Cote CDG000 UV-lacquer 30 to form the lacquer/antenna/activator solution 40.

**[0019]** Ten grams of m-terphenyl (accelerator) 50 was melted in a beaker. The melt 50 was heated to 110° F. 100 grams of 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran (Formula 9) were added in small increments to the melt upon constant stirring:



(average particle size less than about 5  $\mu$ m). The temperature of the mixture was increased up to 170-180°C. Stirring was continued until complete dissolution of the 2'-anilino-3'-methyl-6'-(dibutylamino)fluoran in the melt (approximately 10-15 min) to form an accelerator/leuco-dye solution. 550mg of silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide) (Formula 1), was added to the melt upon constant stirring.

**[0020]** Heating and stirring was continued for about two to three additional minutes until the IR dye was completely dissolved in the melt to form a leuco dye/antenna/accelerator alloy (eutectic). Temperature of the leuco dye/antenna/accelerator alloy was kept to below about 190°C.

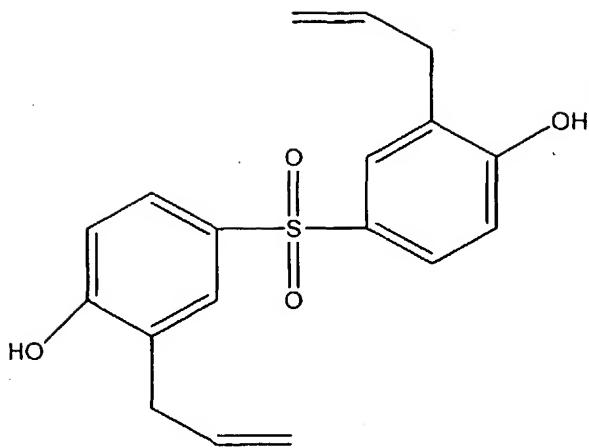
**[0021]** The leuco-dye/antenna/accelerator alloy was then poured into a pre-cooled freezer tray lined with aluminum foil, where it was allowed to solidify. The solidified melt was milled into a coarse powder and then attrition-ground in the aqueous dispersion until the average particle size of the ground alloy was less than about 4  $\mu$ m. The ground alloy was dried in a vacuum to form a leuco-dye eutectic powder.

**[0022]** The mixture of leuco-dye/antenna/accelerator alloy and lacquer/antenna/activator solution 40 was formed into a UV-curable paste 50 and screen printed onto a substrate at a thickness of approximately about 5 to about 7  $\mu$ m to form an imaging medium. The coating on the medium was then UV cured by mercury lamp.

**[0023]** Direct marking was effected on the resulting coated substrate with a 45 mW laser. A mark of approximately 20  $\mu$ m x 45  $\mu$ m was produced with duration of energy applications of about 30  $\mu$ sec to about 100  $\mu$ sec. Direct imaging occurs when the desired image is marked on the imaging medium, without the use of a printing intermediary.

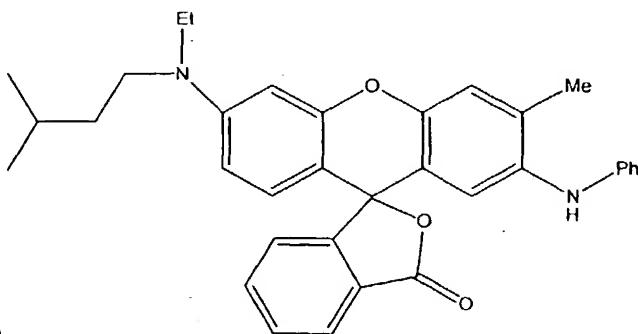
#### Example 2

**[0024]** The method of Example 1 was carried out, except that 20 grams of phenol, 4,4'-sulfonylbis[2-(2-propenyl)-(9CI) (Formula 10):



(10)

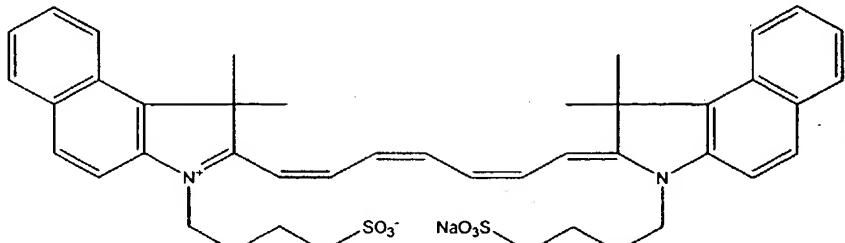
was used as the activator and 1.2 grams of antenna silicon 2,3 naphthalocyanine bis(trihexylsilyl oxide) (Formula 1), were dissolved in the melted dibenzyl oxalate to form the activator/antenna solution 20. Activator/antenna solution 20 was cooled and ground into a fine powder 70. Additionally, instead of using 100 grams of 2'-anilino-3'-methyl-6'-(dibutylamino) fluoran as the leuco-dye, 15 grams of leuco-dye 2-anilino-3-methyl-6-(N-ethyl-N-isoamylamino)fluorane (Formula 11) (average particle size < 5  $\mu\text{m}$ ) were used to form the accelerator/leuco-dye solution.



(11)

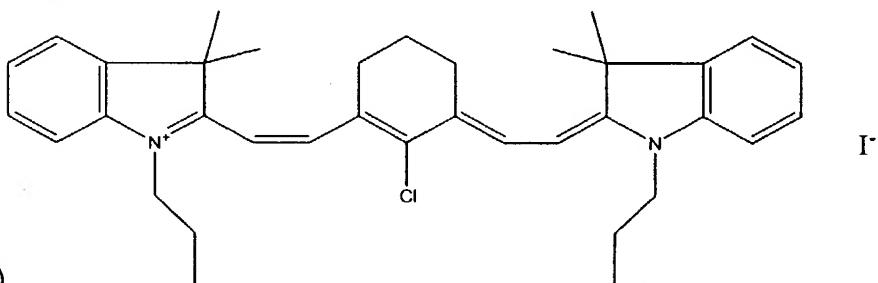
As with Example 1, the mixture of leuco-dye/antenna/accelerator alloy and lacquer/antenna/activator solution 40 was formed into a UV-curable paste 90 and screen printed onto a substrate at a thickness of approximately 7  $\mu\text{m}$  to form an imaging medium. The coating on the medium was then UV cured by mercury lamp. Direct marking was effected on the resulting coated substrate with a 45 mW laser. A mark of approximately 20  $\mu\text{m}$  x 45  $\mu\text{m}$ , with optical density of >0.5, was produced with energy applications of about 60  $\mu\text{sec}$  to 100  $\mu\text{sec}$ .

[0025] Similar procedures were followed using antennae of indocyanine green (Aldrich 22886-9) (Formula 12);



(12)

IR 780 (Aldrich 42,531-1) (Formula 13); and 800NP



(13)

The coatings were exposed to a 21,000 lux fluorescent light for 24 hours, and screened for the marking speed and optical density. Coatings containing indocyanine green or IR 780 did not show any markings after the light treatment. Coatings containing silicon 2,3 naphthalocyanine bis(trihexylsilyloxide) antenna (Formula 1) or 800NP showed less than 20% drop in optical density after the light exposure.

[0026] The foregoing discussion is meant to be illustrative of the principles and various embodiments of the present invention. Numerous variations and modifications will become apparent to those skilled in the art once the above disclosure is fully appreciated. It is intended that the following claims be interpreted to embrace all such variations and modifications.

=> d his

(FILE 'HOME' ENTERED AT 08:11:04 ON 27 DEC 2004)

FILE 'HCA' ENTERED AT 08:11:14 ON 27 DEC 2004

E GORE MAKARAND P/AU

L1 27 S GORE MAKARAND P/AU

FILE 'REGISTRY' ENTERED AT 08:13:04 ON 27 DEC 2004

E PHTHALOCYANINE/CN

FILE 'REGISTRY' ENTERED AT 08:13:14 ON 27 DEC 2004

E PHTHALOCYANINE/CN

L2 1 S PHTHALOCYANINE/CN

L3 25216 S ?PHTHALOCYANIN?/CNS

E NAPHTHALOCYANINE/CN

L4 1 S NAPHTHALOCYANINE/CN

L5 71 S ?NAPHTHALOCYANIN?/CNS

E BISPHENOL A/CN

L6 1 S BISPHENOL A/CN

L7 1 S FLUORAN/CN

L8 12698 S 7938.12/RID

ACTIVATE LE021/A

-----

L9 STR

L10 4299 SEA FILE=REGISTRY SSS FUL L9

-----

ACTIVATE LE021A/A

-----

L11 STR

L12 ( 4299)SEA FILE=REGISTRY SSS FUL L11

L13 STR

L14 6 SEA FILE=REGISTRY SUB=L12 SSS FUL L13

-----

FILE 'LREGISTRY' ENTERED AT 09:31:02 ON 27 DEC 2004

L15 STRUCTURE L13

FILE 'REGISTRY' ENTERED AT 09:51:16 ON 27 DEC 2004

L16 11 S L15 SSS SAM SUB=L3

L17 178 S L15 SSS FUL SUB=L3

SAV L17 LE021B/A

L18 1 S L15 SSS SAM SUB=L5

L19 5 S L15 SSS FUL SUB=L5

SAV L19 LE021C/A

L20 0 S L3 AND L8 AND L6

L21 1 S L3 AND L8

L22 0 S L13 SSS SAM SUB=L17

L23 0 S L13 SSS FUL SUB=L17

FILE 'HCA' ENTERED AT 10:08:42 ON 27 DEC 2004

L24 35754 S L3

L25 34936 S ?PHTHALOCYANIN?

L26 42036 S L24 OR L25

L27 12857 S L6

L28 55953 S BISPHENOL?(W)A

L29 59869 S L27 OR L28

L30 27141 S L8

L31 18106 S ?FLUORAN?

L32 41355 S L30 OR L31  
 L33 13 S L26 AND L29 AND L32  
 L34 649 S L5  
 L35 1025 S ?NAPHTHALOCYANIN?  
 L36 1147 S L34 OR L35  
 L37 0 S L36 AND L29 AND L32  
 L38 21 S L36 AND L32  
 L39 372570 S REPROGRAPH?/SC, SX  
 L40 1 S L38 AND L39  
 L41 820 S L10  
 L42 0 S L41 AND L29 AND L32  
 L43 18 S L41 AND L32  
 L44 8 S L43 AND L39  
 L45 2 S L14  
 L46 233 S L17  
 L47 0 S L46 AND L29 AND L32  
 L48 0 S L46 AND L29  
 L49 12 S L46 AND L32  
 L50 1 S L49 AND L39  
 L51 94 S L46 AND L39  
 L52 100 S L19  
 L53 0 S L51 AND L29 AND L32  
 L54 0 S L51 AND L29  
 L55 1 S L51 AND L32  
 L56 53 S L52 AND L39  
 L57 1 S L21  
 E IMAGING/CT  
 E E3+ALL  
 L58 135493 S IMAGING?  
 L59 1 S L56 AND L58  
 L60 0 S L52 AND L29 AND L32  
 L61 0 S L52 AND L29  
 L62 0 S L52 AND L32  
 L63 2 S L52 AND L58  
 L64 0 S L1 AND L25  
 L65 3 S L1 AND L58  
 SEL L65 RN

FILE 'REGISTRY' ENTERED AT 11:16:47 ON 27 DEC 2004  
 L66 17 S E1-E17  
 L67 3 S L66 AND L8  
 L68 1 S 89331-94-2/RN

FILE 'HCA' ENTERED AT 11:21:34 ON 27 DEC 2004  
 L69 1046 S L68  
 L70 1 S L26 AND L29 AND L69  
 L71 0 S L36 AND L69  
 L72 8 S L33 AND L39

FILE 'REGISTRY' ENTERED AT 11:43:58 ON 27 DEC 2004  
 E SILICON-2,3-NAPHTHALOCYANINE/CN

FILE 'LREGISTRY' ENTERED AT 11:50:50 ON 27 DEC 2004  
 L73 STRUCTURE L15

FILE 'REGISTRY' ENTERED AT 12:08:43 ON 27 DEC 2004  
 L74 0 S L73 SSS SAM SUB=L17  
 L75 16 S L73 SSS FUL SUB=L17

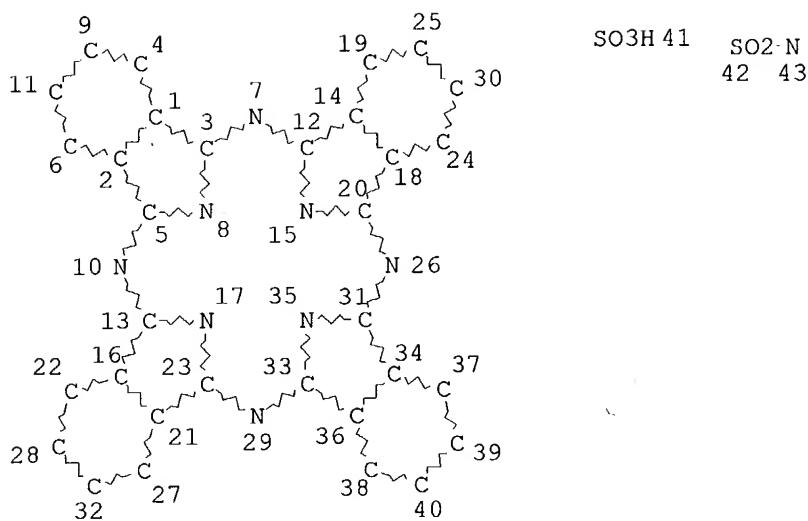
le 10/656,021

12/27/2004

FILE 'HCA' ENTERED AT 12:14:38 ON 27 DEC 2004

L76 4 S L75  
L77 1 S L76 AND L39  
L78 0 S L76 AND L29 AND L32  
L79 2 S L76 AND L32  
L80 0 S L76 AND L29  
L81 495952 S PHOTOGRAPH?/SC,SX  
L82 5 S L38 AND L81  
L83 372574 S L82 OR L39  
L84 1 S L83 AND L76  
L85 8 S L33 AND L83  
L86 5 S L38 AND L83  
L87 8 S L43 AND L83  
L88 5 S L83 AND L49  
L89 53 S L83 AND L56  
L90 0 S L89 AND L32  
L91 53 S L52 AND L83  
L92 0 S L91 AND L29 AND L32  
L93 0 S L91 AND L29  
L94 0 S L91 AND L32  
L95 11 S L33 AND L81  
L96 5 S L49 AND L83  
L97 98 S L46 AND L83  
L98 0 S L97 AND L29  
L99 5 S L97 AND L32  
L100 495952 S L81 OR L39  
L101 5 S L100 AND L38  
L102 11 S L100 AND L33  
L103 5 S L100 AND L38  
L104 10 S L100 AND L43  
L105 6 S L100 AND L49  
L106 62 S L52 AND L100  
L107 0 S L106 AND L29 AND L32  
L108 0 S L106 AND L29  
L109 0 S L106 AND L32  
L110 27 S L95 OR L101 OR L102 OR L103 OR L104 OR L105  
L111 11 S L95 AND L102  
L112 21 S L95 OR L104  
L113 26 S L110 NOT L76

=> d que stat l10  
L9 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

## STEREO ATTRIBUTES: NONE

L10 4299 SEA FILE=REGISTRY SSS FUL L9

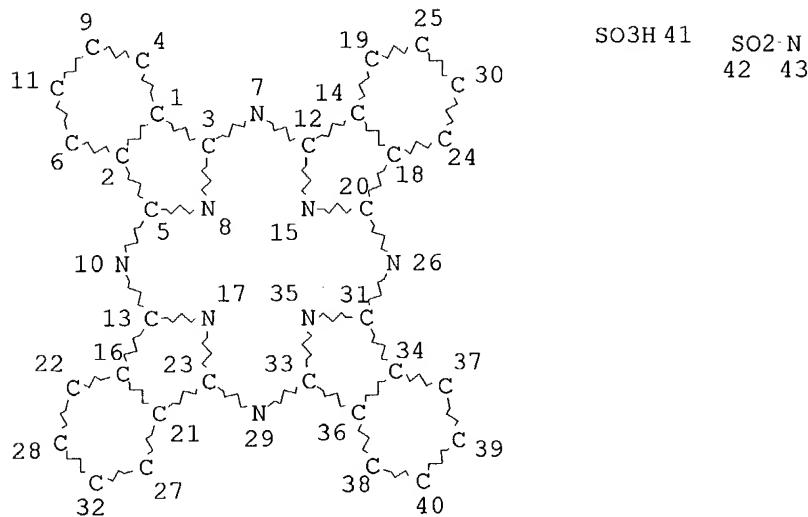
100.0% PROCESSED 4389 ITERATIONS

4299 ANSWERS

SEARCH TIME: 00.00.01

=&gt; d que stat 114

L11 STR



le 10/656,021

12/27/2004

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

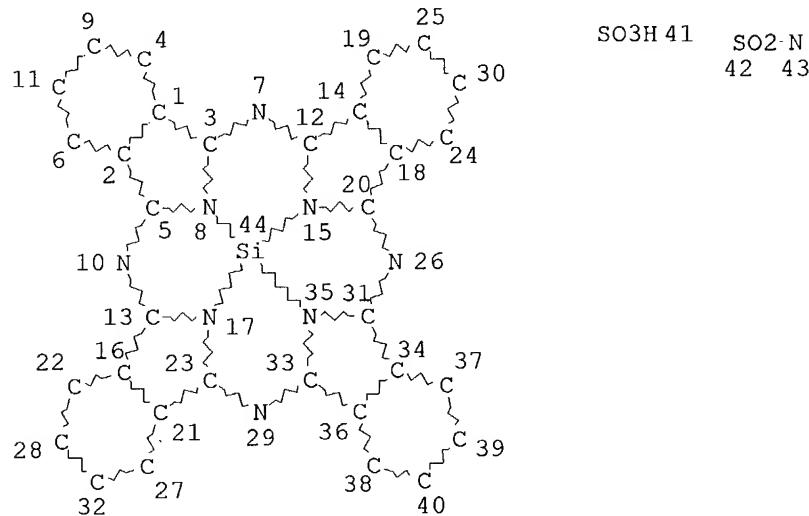
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L12 ( 4299) SEA FILE=REGISTRY SSS FUL L11

L13 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 44

STEREO ATTRIBUTES: NONE

L14 6 SEA FILE=REGISTRY SUB=L12 SSS FUL L13

100.0% PROCESSED 6 ITERATIONS

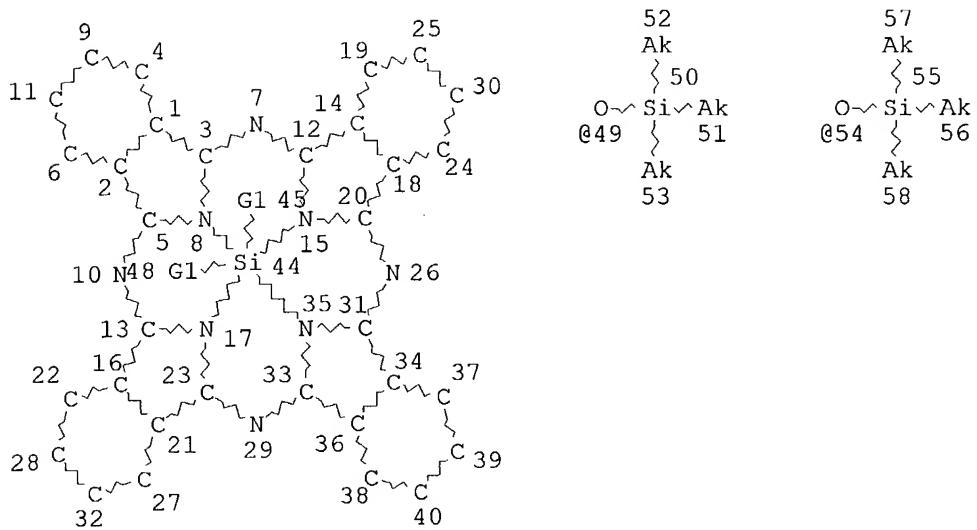
SEARCH TIME: 00.00.01

6 ANSWERS

=> d que stat l17

L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS

L15 STR



VAR G1=49/54

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS E6 C AT 56

ECOUNT IS E6 C AT 57

ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

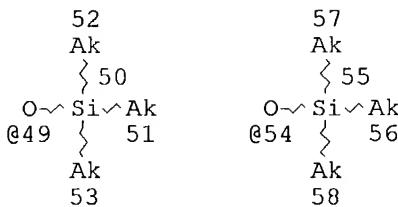
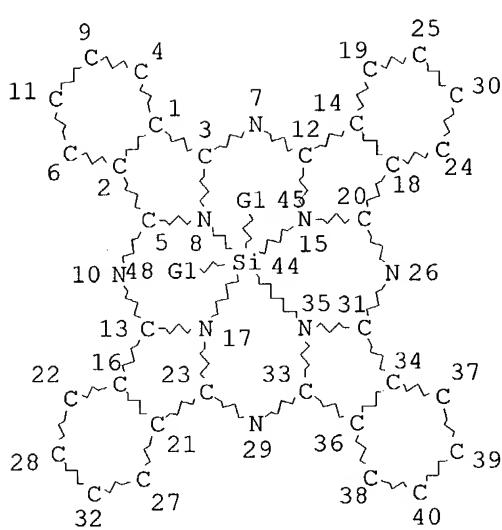
L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15

100.0% PROCESSED 520 ITERATIONS

SEARCH TIME: 00.00.01

178 ANSWERS

```
=> d que stat 119
L5      71 SEA FILE=REGISTRY ABB=ON  PLU=ON  ?NAPHTHALOCYANIN?/CNS
L15      STR
```



VAR G1=49/54  
NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS E6 C AT 56

ECOUNT IS E6 C AT 57

ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

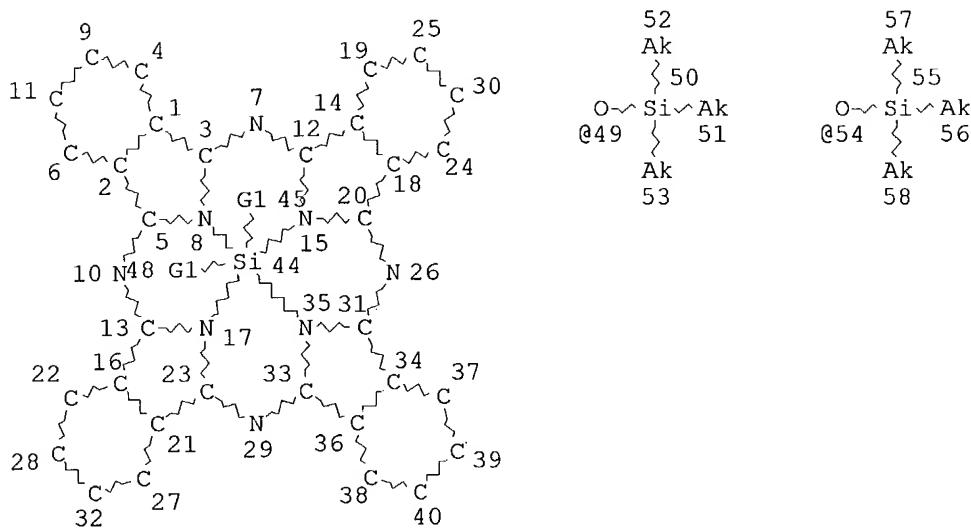
L19 5 SEA FILE=REGISTRY SUB=L5 SSS FUL L15

100.0% PROCESSED 5 ITERATIONS

5 ANSWERS

SEARCH TIME: 00.00.01

=> d que stat 175  
L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS  
L15 STR



VAR G1=49/54

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS E6 C AT 56

ECOUNT IS E6 C AT 57

ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:

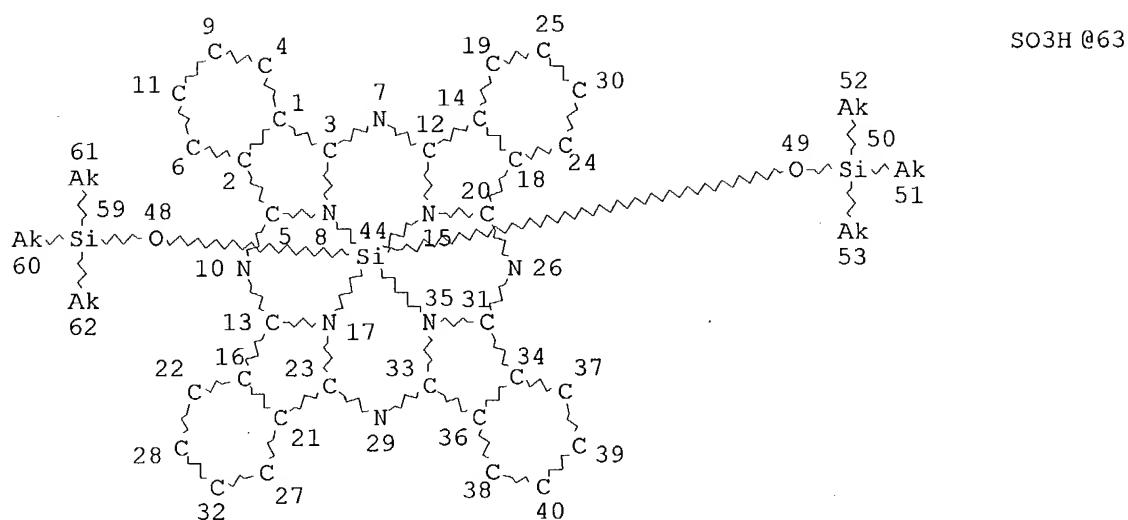
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15

L73 STR



SO<sub>2</sub>-N  
@64 65

```

VAR G1=63/64
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 51
GGCAT IS SAT AT 52
GGCAT IS SAT AT 53
GGCAT IS SAT AT 60
GGCAT IS SAT AT 61
GGCAT IS SAT AT 62
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS M1-X10 C AT 51
ECOUNT IS M1-X10 C AT 52
ECOUNT IS M1-X10 C AT 53
ECOUNT IS M1-X10 C AT 60
ECOUNT IS M1-X10 C AT 61
ECOUNT IS M1-X10 C AT 62

```

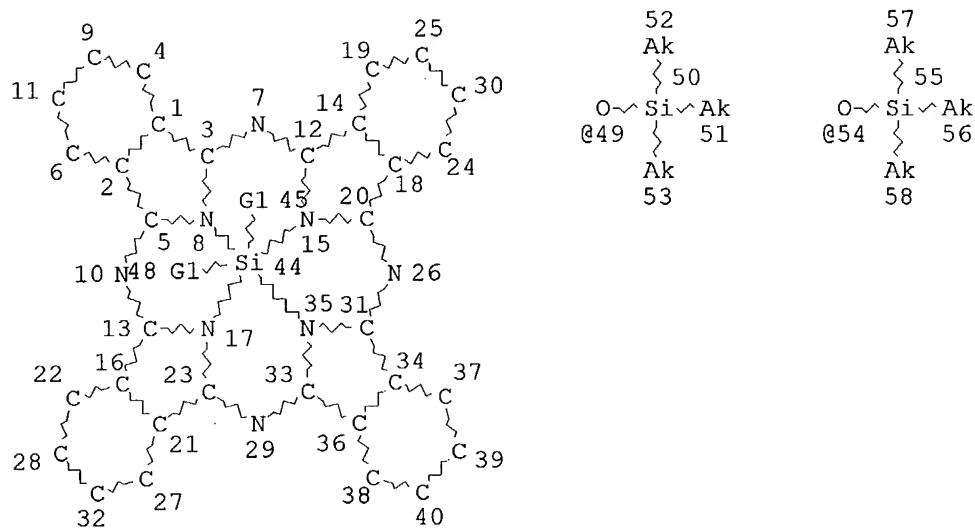
GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 55

STEREO ATTRIBUTES: NONE  
L75 16 SEA FILE=REGISTRY SUB=L17 SSS FUL L73

100.0% PROCESSED 16 ITERATIONS 16 ANSWERS  
SEARCH TIME: 00.00.01

⇒

=> d que stat 176  
 L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS  
 L15 STR



VAR G1=49/54

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 51

GGCAT IS SAT AT 52

GGCAT IS SAT AT 53

GGCAT IS SAT AT 56

GGCAT IS SAT AT 57

GGCAT IS SAT AT 58

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X10 C AT 51

ECOUNT IS M1-X10 C AT 52

ECOUNT IS M1-X10 C AT 53

ECOUNT IS E6 C AT 56

ECOUNT IS E6 C AT 57

ECOUNT IS E6 C AT 58

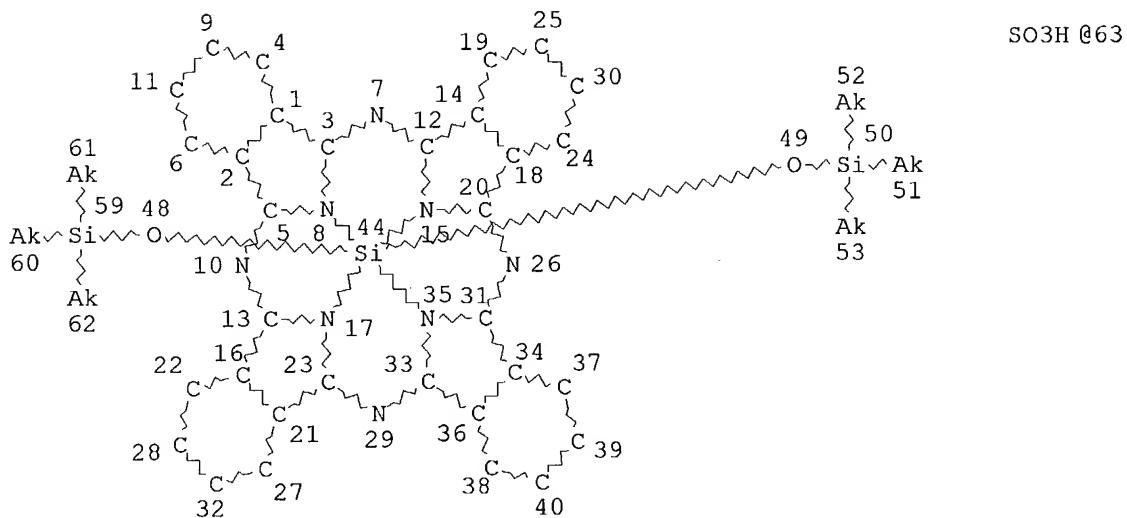
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE

L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15  
 L73 STR



SO2-N  
@64 65

G1 66

VAR G1=63/64  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS SAT AT 51  
 GGCAT IS SAT AT 52  
 GGCAT IS SAT AT 53  
 GGCAT IS SAT AT 60  
 GGCAT IS SAT AT 61  
 GGCAT IS SAT AT 62  
 DEFAULT ECLEVEL IS LIMITED  
 ECOUNT IS M1-X10 C AT 51  
 ECOUNT IS M1-X10 C AT 52  
 ECOUNT IS M1-X10 C AT 53  
 ECOUNT IS M1-X10 C AT 60  
 ECOUNT IS M1-X10 C AT 61  
 ECOUNT IS M1-X10 C AT 62

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 55

STEREO ATTRIBUTES: NONE  
 L75 16 SEA FILE=REGISTRY SUB=L17 SSS FUL L73  
 L76 4 SEA FILE=HCA ABB=ON PLU=ON L75

=> d 176 1-4 cbib abs hitstr hitind

L76 ANSWER 1 OF 4 HCA COPYRIGHT 2004 ACS on STN  
 140:392335 Fluorescent silicon phthalocyanine dyes for use with biomolecules..  
 Peng, Xinzhan; Draney, Daniel R.; Chen, Jiyan (Li-Cor, Inc., USA). PCT  
 Int. Appl. WO 2004038378-A2-20040506, 82 pp. DESIGNATED STATES: W: AE,  
 AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.  
(English). CODEN: PIXXD2. APPLICATION: WO 2003-US33995 20031024.

PRIORITY: US 2002-PV421287 20021025.

AB Fluorescent dyes are disclosed which are useful as reporter groups for labeling biomols. The silicon phthalocyanine dyes disclosed are preferably water soluble, isomerically pure, possess high quantum yield, and are useful in bioassays. In an example, 3-nitrophthalonitrile was treated with 1,3-propanediol to give a hydroxypropoxylated phthalonitrile which with NH<sub>3</sub> was converted to a diiminoisoindoline for use as a phthalocyanine building block with SiCl<sub>4</sub>.

IT 685898-15-1P 685898-16-2P 685898-17-3P

685898-18-4P 685898-19-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

RN 685898-15-1 HCA

CN Silicate(4-), bis[N-[3-[ (hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[ (29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]-1-propanolato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 685898-16-2 HCA

CN Silicate(4-), bis[N-[3-[ (hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[ (29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]propyl 1H-imidazole-1-carboxylato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 685898-17-3 HCA

CN Silicate(5-), bis[N-[3-[ (hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][4-[[3-[ (29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]propoxy]carbonyl]amino]butanoato(3-)]-, pentasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 685898-18-4 HCA

CN Silicate(4-), bis[N-[3-[ (hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[ (29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]propyl [4-[(2,5-dioxo-1-pyrrolidinyl)oxy]-4-oxobutyl]carbamato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 685898-19-5 HCA

CN Silicate(5-), bis[N-[3-[ (hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][N-[[3-[ (29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]propoxy]carbonyl]glycinato(3-)]-, pentasodium, (OC-6-13)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 685898-20-8P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)

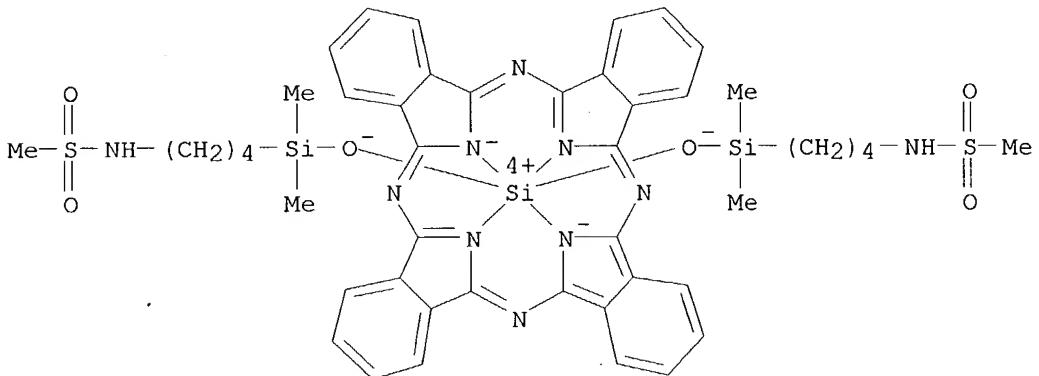
RN 685898-20-8 HCA  
 CN Silicate(4-), bis[N-[3-[(hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)][3-[(29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]propyl  
 21-[(3aS,4S,6aR)-hexahydro-2-oxo-1H-thieno[3,4-d]imidazol-4-yl]-6,17-dioxo-10,13-dioxa-2,7,16-triazaheneicosanoato(2-)]-, tetrasodium, (OC-6-13)- (9CI) (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 IT 685898-26-4DP, fluorescent indicators  
 RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (silicon phthalocyanine fluorescent dyes for labeling of biomols.)  
 RN 685898-26-4 HCA  
 CN Silicate(2-), [4-[13,13-dimethyl-18,25-dioxo-29-[(29H,31H-phthalocyanin-1-yl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)oxy]-26-oxa-4,6,17,24-tetraaza-13-azonia-4,5-nonacosadienyl]-4-methylmorpholiniumato(2-)]bis[N-[3-[(hydroxy- $\kappa$ O)dimethylsilyl]propyl]-3-sulfo-N,N-bis(3-sulfopropyl)-1-propanaminiumato(4-)]-, disodium, (OC-6-13)- (9CI) (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 IC ICM G01N  
 CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)  
 Section cross-reference(s): 9, 25, 28, 78  
 IT 19333-15-4P 685898-10-6P 685898-11-7P 685898-12-8P 685898-13-9P  
 685898-14-0P 685898-15-1P 685898-16-2P  
 685898-17-3P 685898-18-4P 685898-19-5P  
 685898-21-9P 685898-23-1P 685898-24-2P  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)  
 IT 685898-20-8P  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (production of silicon phthalocyanine fluorescent dyes for labeling of biomols.)  
 IT 685898-22-0P 685898-25-3P 685898-26-4DP, fluorescent indicators  
 RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (silicon phthalocyanine fluorescent dyes for labeling of biomols.)

L76 ANSWER 2 OF 4 HCA COPYRIGHT 2004 ACS on STN  
 124:254783 Phthalocyanine photosensitizers for photodynamic therapy and methods for their use. Kenney, Malcolm E.; Oleinick, Nancy L.; Rihter, Boris D.; Li, Ying Syi (University Hospitals of Cleveland, USA). U.S. US 5484778-A 19960116, 22 pp. Cont.-in-part of U.S. Ser. No. 980,494, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1993-116259 19930902. PRIORITY: US 1990-554290 19900717; US 1992-980494 19921123.  
 AB The present invention relates to a series of novel phthalocyanine compns. (or compds.) suitable for use as photosensitizers for photodynamic therapy. Specifically, the invention relates to a series of new aluminum (Al) germanium (Ge), gallium (Ga), tin (Sn) and/or silicon (Si) phthalocyanines having substituted amine or quaternary ammonium axial ligands attached to the central metal, and the use of these new phthalocyanine compns. for the treatment of cancer through photosensitization. Methods are disclosed for preparing these compns. for use in photodynamic therapy.  
 IT 167945-62-2

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (phthalocyanine photosensitizer preparation for photodynamic therapy, and  
 method of use)

RN 167945-62-2 HCA

CN Silicon, bis[N-[4-(hydroxydimethylsilyl)butyl]methanesulfonamido-  
 ON][29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-12)- (9CI) (CA  
 INDEX NAME)



IC ICM C09B047-04

ICS C09B047-08; A61K031-555; A61K031-685

NCL 514063000

CC 8-9 (Radiation Biochemistry)

Section cross-reference(s): 28, 63

IT 142084-56-8 147762-70-7 158239-63-5 158239-64-6 167945-51-9  
 167945-54-2 167945-56-4 167945-58-6 **167945-62-2**  
 167945-63-3 167945-65-5 167945-68-8 167945-73-5 167945-75-7  
 167945-77-9 167945-80-4 167945-81-5 167945-84-8 167945-85-9  
 167945-87-1 167945-88-2 167945-92-8 175159-74-7

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (phthalocyanine photosensitizer preparation for photodynamic therapy, and  
 method of use)

L76 ANSWER 3 OF 4 HCA COPYRIGHT 2004 ACS on STN

123:202041 Phthalocyanine photosensitizers for photodynamic therapy and  
 methods for their synthesis and use. Kenney, Malcolm E.; Oleinick, Nancy  
 L.; Rihter, Boris D.; Li, Ying-syi (Case Western Reserve University, USA).

PCT Int. Appl. WO-9506688 A1 19950309, 67 pp. DESIGNATED STATES: W:

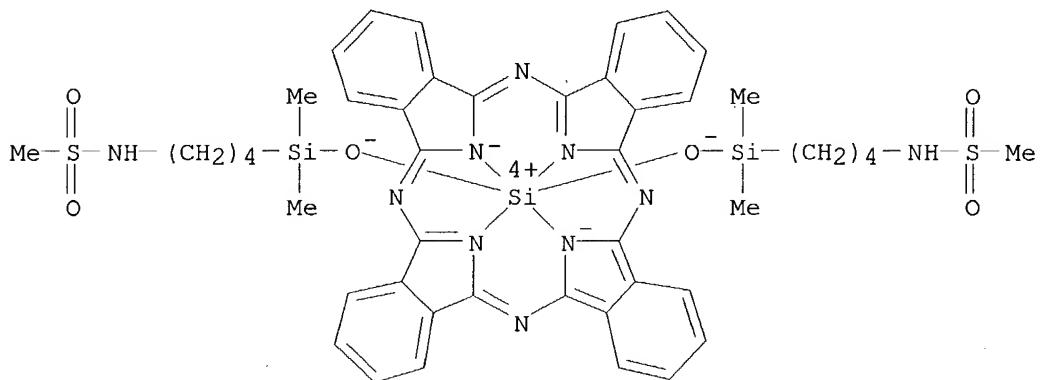
AU, CA, JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC,  
 NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1994-US10052  
 19940831. PRIORITY: US 1993-116259 19930902.

AB The phthalocyanines have substituted aminoalkyl or quaternary ammonium  
 axial ligands attached to the central metal, which is Si, Al, Ga, Ge or  
 Sn, and are useful for the treatment of cancer through photosensitization.  
 MeMgCl was added to a THF solution of (MeO)3SiCH2CH2CH2NMe2 to give  
 MeOSiMe2(CH2)3NMe2, which was added slowly to a suspension of HOAlPc (Pc =  
 phthalocyanine), forming blue Me2N(CH2)3SiMe2OAlPc (I). I was quaternized  
 with MeI to give a blue solid, soluble in MeOH and CH2Cl2 but insol. in water  
 or PhMe. Both I and its quaternary derivative showed an inhibitory effect on  
 the growth of Chinese hamster lung fibroblasts in vitro when used with red  
 light irradiation

IT **167945-62-2P**

RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological  
 study); PREP (Preparation); USES (Uses)

(preparation of phthalocyanine photosensitizers for photodynamic therapy)  
 RN 167945-62-2 HCA  
 CN Silicon, bis[N-[4-(hydroxydimethylsilyl)butyl]methanesulfonamidato-  
 ON] [29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32]-, (OC-6-12)- (9CI) (CA  
 INDEX NAME)

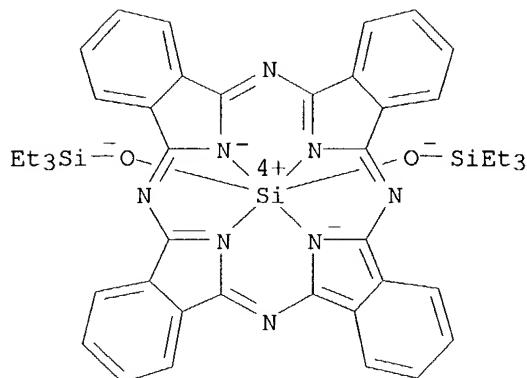


IC ICM C09B047-04  
 ICS C09B047-08; A61K031-695  
 CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic  
 Sensitizers)  
 Section cross-reference(s): 8  
 IT 142084-55-7P 142084-57-9P 142084-58-0P 158239-63-5P 158239-64-6P  
 167945-51-9P 167945-54-2P 167945-56-4P 167945-58-6P  
**167945-62-2P** 167945-63-3P 167945-65-5P 167945-68-8P  
 167945-70-2P 167945-73-5P 167945-75-7P 167945-77-9P 167945-80-4P  
 167945-81-5P 167945-84-8P 167945-85-9P 167945-87-1P 167945-88-2P  
 167945-92-8P  
 RL: IMF (Industrial manufacture); THU (Therapeutic use); BIOL (Biological  
 study); PREP (Preparation); USES (Uses)  
 (preparation of phthalocyanine photosensitizers for photodynamic therapy)

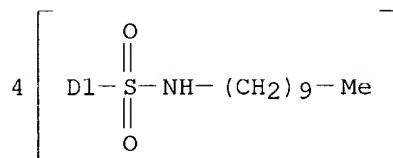
L76 ANSWER 4 OF 4 HCA COPYRIGHT 2004 ACS on STN  
 117:201999 Rewritable optical recording medium. Hagiwara, Hideo; Hayashi,  
 Nobuyuki; Tai, Seiji; Akimoto, Takayuki; Katayose, Mitsuo (Hitachi  
 Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP-04014486 A2  
 19920120 Heisei, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1990-118009 19900508.

GI For diagram(s), see printed CA Issue.  
 AB The title optical recording medium utilizes adjacent polymer layers based  
 on a polymer which is rubberlike at room temperature and a dye DY1 and DY2,  
 resp., DY1 and DY2 absorbing at different wavelengths and 1 or both having  
 a structure represented by (I) [M = Si, Ge, Sn; Y = aryloxy, alkoxy,  
 trialkylsiloxy, triarylsiloxy, trialkoxysiloxy, triaryloxy siloxy,  
 trityloxy, acyloxy; A1-4 = aromatic ring].  
 IT **143558-31-0**  
 RL: USES (Uses)  
 (pigment, optical recording medium using)  
 RN 143558-31-0 HCA  
 CN Silicon, [N,N',N'',N''']-tetrakis(decyl)-29H,31H-phthalocyanine-C,C,C,C-  
 tetrasulfonamidato(2-)-N29,N30,N31,N32]bis(triethylsilylanoate)- (9CI) (CA  
 INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM B41M005-26

ICS G11B007-24

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT	122342-93-2	143558-24-1	143558-25-2	143558-26-3	143558-27-4
	143558-28-5	143558-29-6	143558-30-9	<b>143558-31-0</b>	
	143558-32-1	143558-33-2	143558-34-3	143558-35-4	143558-38-7
	143558-39-8	143558-40-1	143558-41-2	143558-42-3	143558-43-4
	143558-44-5	143558-45-6	143558-46-7	143558-47-8	143568-19-8
	143568-20-1	143568-21-2	143967-15-1	143967-16-2	143967-17-3
	143967-18-4	143967-19-5	143967-20-8	143967-21-9	143967-22-0
	143967-23-1	143989-87-1	144013-07-0	144013-58-1	144013-59-2
	144013-60-5	144013-61-6	144013-62-7	144013-63-8	144029-28-7
	144029-29-8	144122-95-2	144122-96-3	144122-97-4	144122-98-5
	144122-99-6	144141-64-0			

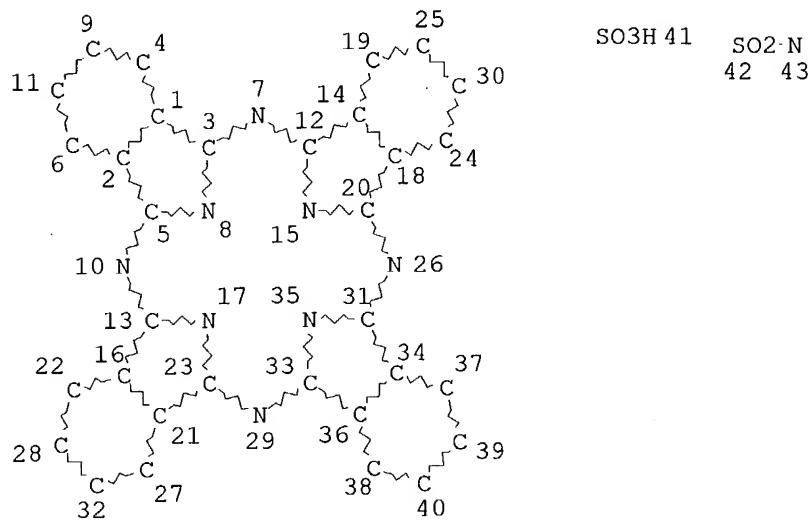
RL: USES (Uses)

(pigment, optical recording medium using)

=&gt;

=&gt; d que stat 1113

L3 25216 SEA FILE=REGISTRY ABB=ON PLU=ON ?PHTHALOCYANIN?/CNS  
 L5 71 SEA FILE=REGISTRY ABB=ON PLU=ON ?NAPHTHALOCYANIN?/CNS  
 L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON BISPHENOL A/CN  
 L8 12698 SEA FILE=REGISTRY ABB=ON PLU=ON 7938.12/RID  
 L9 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

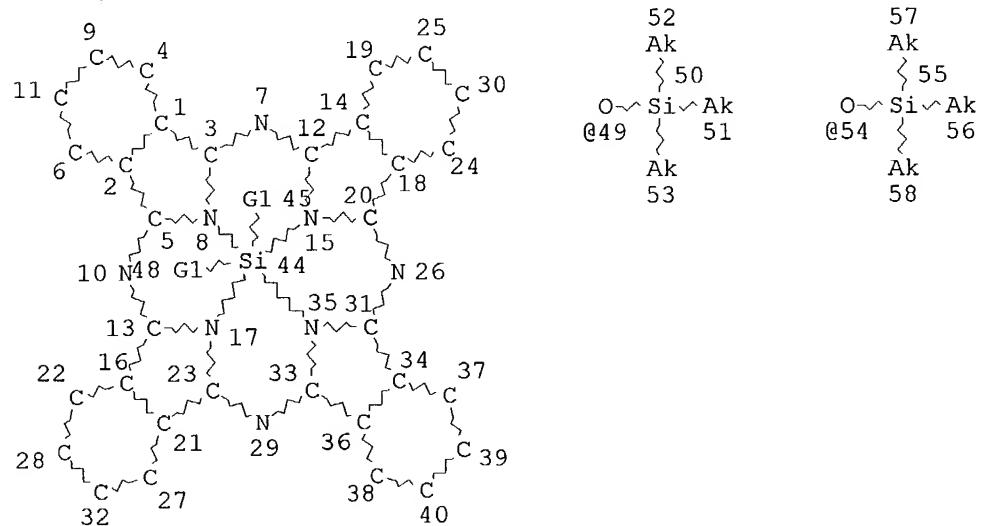
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L10 4299 SEA FILE=REGISTRY SSS FUL L9  
 L15 STR



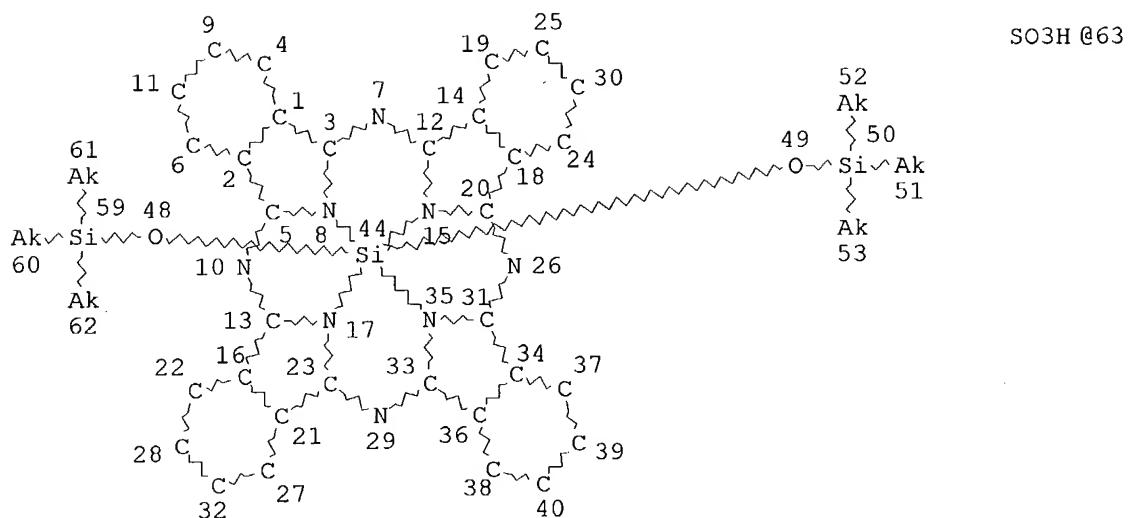
VAR G1=49/54

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
 GGCAT IS SAT AT 51  
 GGCAT IS SAT AT 52  
 GGCAT IS SAT AT 53  
 GGCAT IS SAT AT 56  
 GGCAT IS SAT AT 57  
 GGCAT IS SAT AT 58  
 DEFAULT ECLEVEL IS LIMITED  
 ECOUNT IS M1-X10 C AT 51  
 ECOUNT IS M1-X10 C AT 52  
 ECOUNT IS M1-X10 C AT 53  
 ECOUNT IS E6 C AT 56  
 ECOUNT IS E6 C AT 57  
 ECOUNT IS E6 C AT 58

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 53

STEREO ATTRIBUTES: NONE  
 L17 178 SEA FILE=REGISTRY SUB=L3 SSS FUL L15  
 L24 35754 SEA FILE=HCA ABB=ON PLU=ON L3  
 L25 34936 SEA FILE=HCA ABB=ON PLU=ON ?PHTHALOCYANIN?  
 L26 42036 SEA FILE=HCA ABB=ON PLU=ON L24 OR L25  
 L27 12857 SEA FILE=HCA ABB=ON PLU=ON L6  
 L28 55953 SEA FILE=HCA ABB=ON PLU=ON BISPHENOL? (W) A  
 L29 59869 SEA FILE=HCA ABB=ON PLU=ON L27 OR L28  
 L30 27141 SEA FILE=HCA ABB=ON PLU=ON L8  
 L31 18106 SEA FILE=HCA ABB=ON PLU=ON ?FLUORAN?  
 L32 41355 SEA FILE=HCA ABB=ON PLU=ON L30 OR L31  
 L33 13 SEA FILE=HCA ABB=ON PLU=ON L26 AND L29 AND L32  
 L34 649 SEA FILE=HCA ABB=ON PLU=ON L5  
 L35 1025 SEA FILE=HCA ABB=ON PLU=ON ?NAPHTHALOCYANIN?  
 L36 1147 SEA FILE=HCA ABB=ON PLU=ON L34 OR L35  
 L38 21 SEA FILE=HCA ABB=ON PLU=ON L36 AND L32  
 L39 372570 SEA FILE=HCA ABB=ON PLU=ON REPROGRAPH?/SC, SX  
 L41 820 SEA FILE=HCA ABB=ON PLU=ON L10  
 L43 18 SEA FILE=HCA ABB=ON PLU=ON L41 AND L32  
 L46 233 SEA FILE=HCA ABB=ON PLU=ON L17  
 L49 12 SEA FILE=HCA ABB=ON PLU=ON L46 AND L32  
 L73 STR



SO<sub>2</sub>·N  
@64 65

```

VAR G1=63/64
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
GGCAT IS SAT AT 51
GGCAT IS SAT AT 52
GGCAT IS SAT AT 53
GGCAT IS SAT AT 60
GGCAT IS SAT AT 61
GGCAT IS SAT AT 62
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS M1-X10 C AT 51
ECOUNT IS M1-X10 C AT 52
ECOUNT IS M1-X10 C AT 53
ECOUNT IS M1-X10 C AT 60
ECOUNT IS M1-X10 C AT 61
ECOUNT IS M1-X10 C AT 62

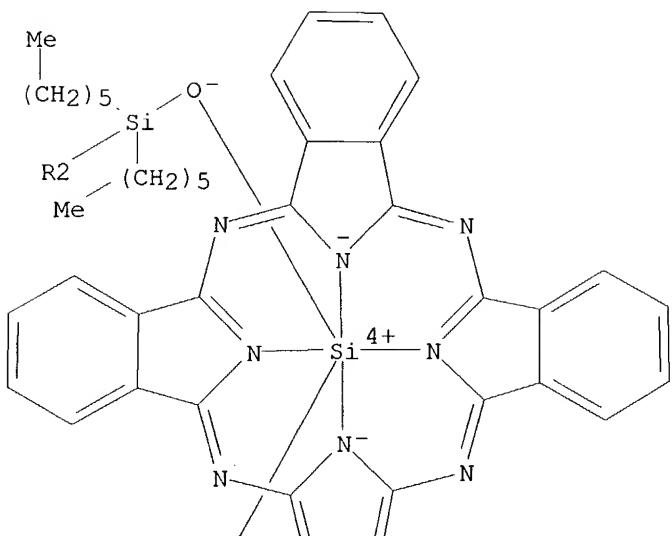
```

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 55

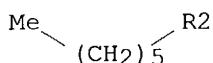
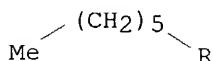
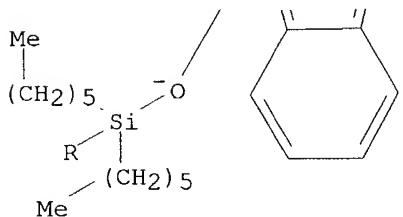
STEREO ATTRIBUTES: NONE

L75	16	SEA	FILE=REGISTRY	SUB=L17	SSS	FUL	L73
L76	4	SEA	FILE=HCA	ABB=ON	PLU=ON	L75	
L81	495952	SEA	FILE=HCA	ABB=ON	PLU=ON	PHOTOGRAPH?	SC, SX
L95	11	SEA	FILE=HCA	ABB=ON	PLU=ON	L33	AND L81
L100	495952	SEA	FILE=HCA	ABB=ON	PLU=ON	L81	OR L39
L101	5	SEA	FILE=HCA	ABB=ON	PLU=ON	L100	AND L38
L102	11	SEA	FILE=HCA	ABB=ON	PLU=ON	L100	AND L33
L103	5	SEA	FILE=HCA	ABB=ON	PLU=ON	L100	AND L38
L104	10	SEA	FILE=HCA	ABB=ON	PLU=ON	L100	AND L43
L105	6	SEA	FILE=HCA	ABB=ON	PLU=ON	L100	AND L49
L110	27	SEA	FILE=HCA	ABB=ON	PLU=ON	L95	OR L101 OR L102 OR L103 OR

PAGE 1-A



PAGE 2-A

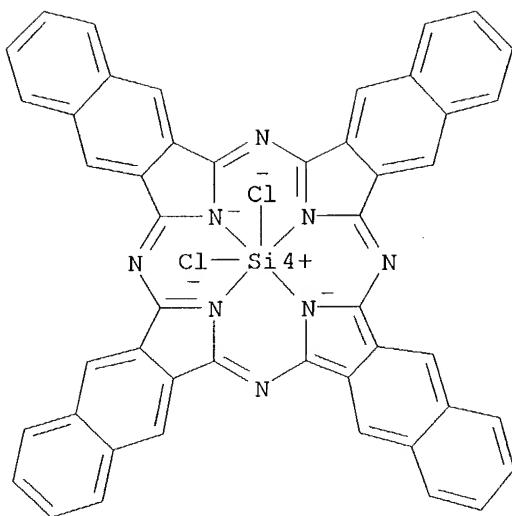


IT 92396-91-3 105528-25-4

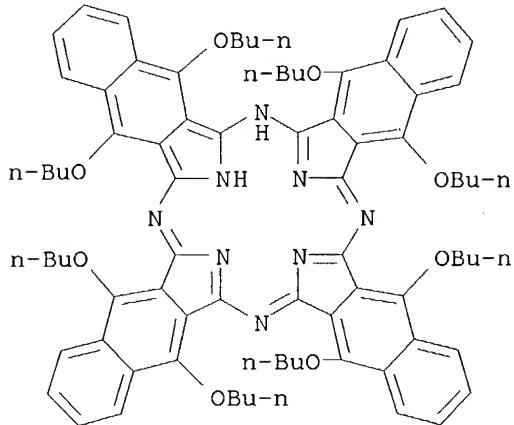
RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrinato(2-)-κN37,κN38,κN39,κN40]-,  
 (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

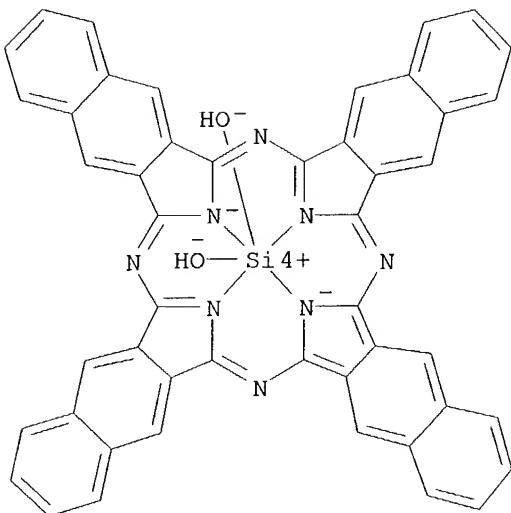
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine,  
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)

IT 92396-90-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,  
(OC-6-12)- (9CI) (CA INDEX NAME)



IT 209161-25-1P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

RN 209161-25-1 HCA

CN Silicon, bis[3-[(hydroxy- $\kappa$ O)dimethylsilyl]propanenitrilato][29H,31H-  
 phthalocyaninato(2-)- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]-,  
 (OC-6-12)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM G01N033-543

ICS G01N033-536; C09B047-04

NCL 436536000

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and  
**Photographic** Sensitizers)

IT 514-73-8 519-62-0 **2321-07-5** 3071-70-3 16595-48-5  
 23178-67-8 23481-50-7 24796-94-9 26529-11-3 39001-62-2  
 52199-35-6 53213-94-8 70365-30-9 83484-76-8 83768-56-3  
 85752-56-3 97148-81-7 97807-64-2 116453-73-7 127274-91-3  
 129707-63-7 150749-57-8 163968-82-9 163968-85-2 171118-93-7  
 195203-87-3 209161-37-5 209161-39-7

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

IT 68-26-8P, Retinol 68812-20-4P **92396-89-9P** 163968-88-5P  
 163968-89-6P 163968-92-1P 163968-94-3P 163968-95-4P 163969-09-3P  
 163969-10-6P 163969-14-0P 183872-63-1P 209161-30-8P 209161-31-9P  
 209161-33-1P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST  
 (Analytical study); PREP (Preparation); USES (Uses)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

IT 75-78-5 76-86-8 597-52-4 1631-83-0 1719-58-0 1835-65-0  
 3468-11-9 3634-67-1 6554-98-9 7646-78-8, reactions 10026-04-7  
 10038-98-9 10264-67-2 17196-12-2 18156-15-5 19333-10-9  
 20082-71-7 26857-61-4 32703-80-3 37623-03-3 53749-38-5  
 74815-81-9 **92396-91-3** 102488-47-1 **105528-25-4**

116453-89-5 183872-68-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 652-11-9P 19333-15-4P 52319-97-8P **92396-90-2P** 163968-99-8P  
 163969-16-2P 163969-17-3P 163969-19-5P 163969-21-9P 163969-23-1P  
 183872-52-8P 183872-54-0P 183872-58-4P 183872-64-2P 209161-29-5P  
 209161-32-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 83218-82-0P 117753-12-5P 163968-91-0P 163969-00-4P 163969-01-5P  
 163969-07-1P 163969-11-7P 163969-15-1P 163969-20-8P 163969-26-4P  
 171118-94-8P 183872-48-2P 183872-49-3P 183872-51-7P 183872-56-2P  
 183872-57-3P 183872-59-5P 183872-66-4P 183872-67-5P 183973-61-7P  
**209161-25-1P**  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

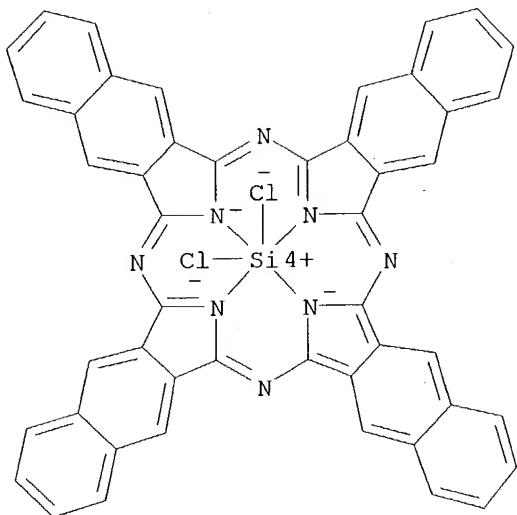
L113 ANSWER 2 OF 26 HCA COPYRIGHT 2004 ACS on STN

135:78227 Fluorescence energy transfer and intramolecular energy transfer in particles using novel compounds. Buechler, Kenneth F.; Noar, Joseph Barry; Tadesse, Lema (Biosite Diagnostics, Inc., USA). U.S. US ~~6251687~~ B1 20010626, 57 pp., Cont.-in-part of U.S. 5,763,189. (English). CODEN: USXXAM. APPLICATION: US 1995-409298 19950323. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712; US 1994-311098 19940923.

AB The invention describes the particles comprising an energy donor as a first component and a fluorescent dye as a second component positioned in said particles at an energy exchanging distance from one another, wherein the two components have a Stokes shift of greater than or equal to 50 nm, said particle having bound on its surface, a protein, polypeptide, nucleic acid, nucleotide or protein containing ligand analog are disclosed and claimed. In addition, novel fluorescent dyes are described which exhibit intramol. energy transfer for use to label various mols., proteins, polypeptides, nucleotides and nucleic acids or to incorporate into particles.

IT **92396-91-3**  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

RN 92396-91-3 HCA  
 CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)



IT 67881-06-5P 92396-89-9P 92396-90-2P

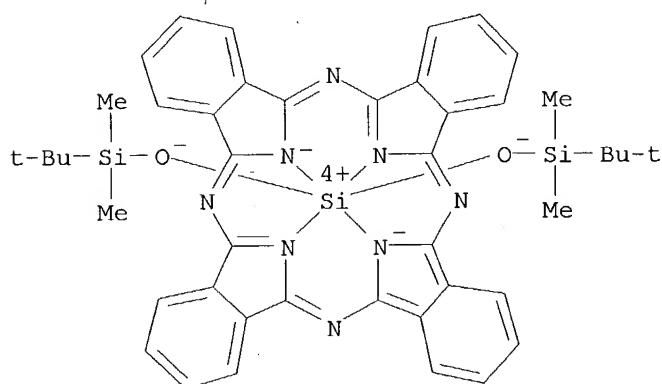
163969-08-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent).

(intermediate; fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

RN 67881-06-5 HCA

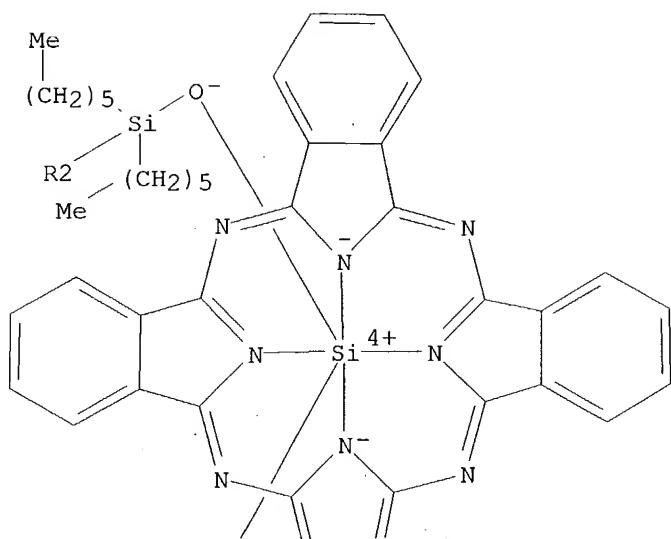
CN Silicon, bis[(1,1-dimethyléthyl)dimethylsilanolato][29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]-, (OC-6-12)- (9CI) (CA INDEX NAME)



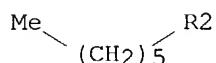
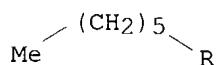
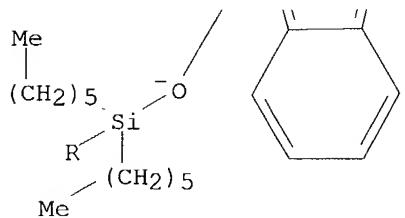
RN 92396-89-9 HCA

CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kappa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

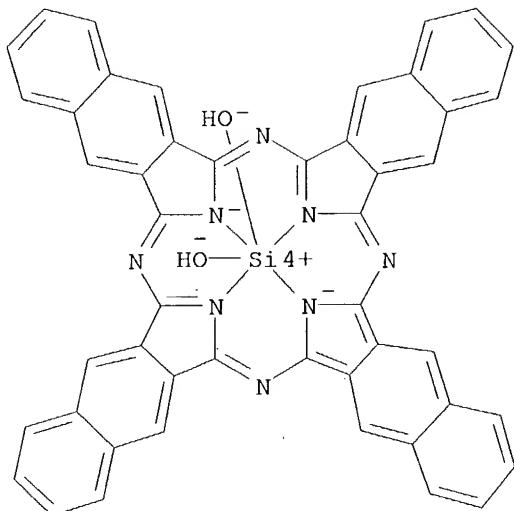
PAGE 1-A



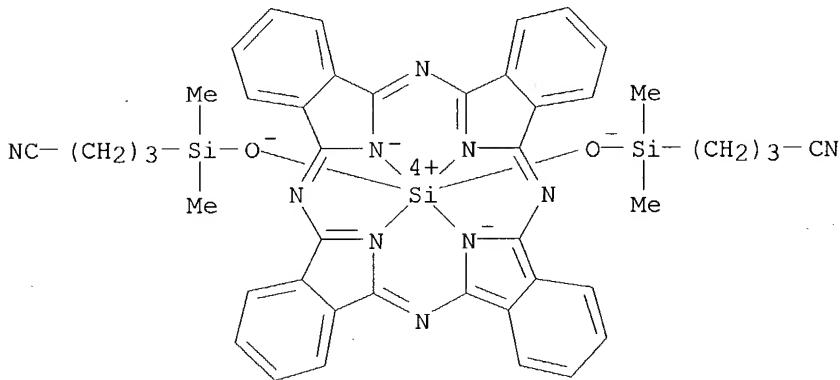
PAGE 2-A



RN 92396-90-2 HCA  
 CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazinato(2-)–κN37,κN38,κN39,κN40]–,  
 (OC-6-12)– (9CI) (CA INDEX NAME)



RN 163969-08-2 HCA

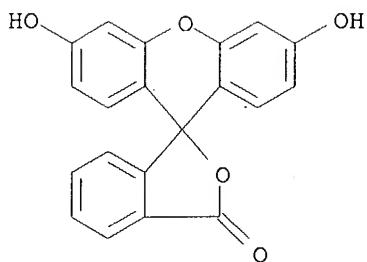
CN Silicon, bis[4-[ (hydroxy- $\kappa$ O)dimethylsilyl]butanenitrilato] [29H,31H-phthalocyaninato(2-) - $\kappa$ N29,  $\kappa$ N30,  $\kappa$ N31,  $\kappa$ N32]-, (OC-6-12)- (9CI) (CA INDEX NAME)

IT 2321-07-5D, Fluorescein, ATP derivs., silicon phthalocyanine complexes 105528-25-4

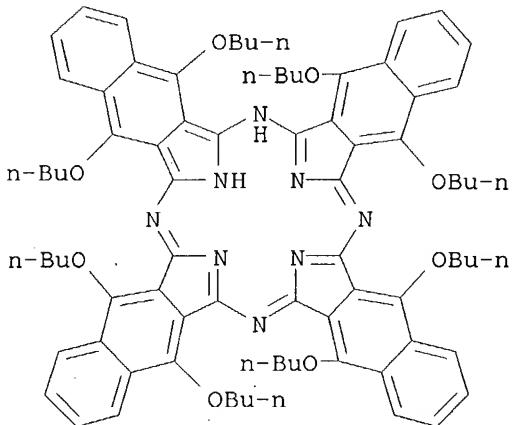
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactant; fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine,  
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)

IC ICM G01N033-543

ICS G01N033-53; B05B005-00

NCL 436518000

CC 41-10 (Dyes, Organic Pigments, Fluorescent Brighteners, and  
Photographic Sensitizers)

Section cross-reference(s): 9

IT 92396-91-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(fluorescence energy transfer and intramol. energy transfer in  
particles using novel compds., manufacture and use in assay of biomol.)

IT 19333-15-4P, Silicon Phthalocyanine Dihydroxide 52319-97-8P

53749-38-5P, (10-Carbomethoxydecyl)dimethylchlorosilane 63405-81-2P,

5,6-Dichloro-1,3-diiminoisoindoline 67881-06-5P 68812-20-4P

83218-82-0P 92396-89-9P 92396-90-2P 117753-12-5P

121668-81-3P 149971-18-6P 153454-01-4P 163968-91-0P 163968-92-1P

163968-99-8P, 4,9-Diethoxy-1,3-diiminobenz[f]isoindoline 163969-00-4P

163969-07-1P 163969-08-2P 163969-10-6P 163969-11-7P

163969-15-1P 163969-16-2P 163969-17-3P 163969-19-5P 163969-20-8P

163969-22-0P 163969-23-1P 163969-26-4P 183872-64-2P 183872-67-5P

183872-69-7P 183872-70-0P 183872-72-2P 183872-98-2P 183872-99-3P

183873-01-0P 183873-03-2P 183973-59-3P 209161-29-5P 346650-98-4P

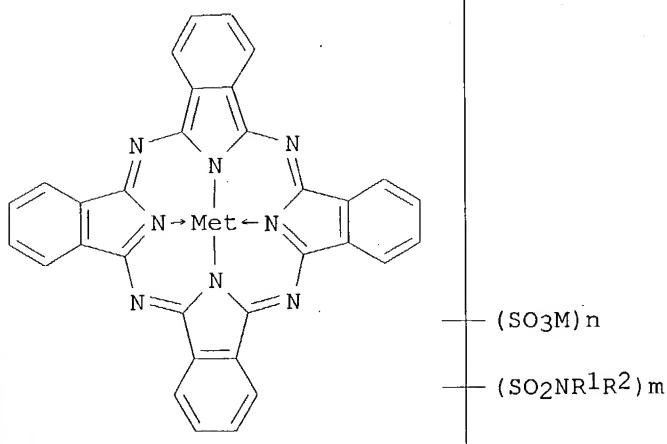
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)(intermediate; fluorescence energy transfer and intramol. energy  
transfer in particles using novel compds., manufacture and use in assay of  
biomol.)

IT 50-00-0, Formaldehyde, reactions 68-26-8, all-trans-Retinol 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane 107-96-0, 3-Mercaptopropionic acid 119-64-2, 1,2,3,4-Tetrahydronaphthalene 140-66-9, 4-Octylphenol 597-52-4, Triethylsilanol 712-74-3, Benzene-1,2,4,5-tetracarbonitrile 1719-58-0, Chlorodimethylvinylsilane 1835-65-0, Tetrafluorophthalonitrile 2321-07-5D, Fluorescein, ATP derivs., silicon phthalocyanine complexes 3468-11-9, 1,3-Diminoisoindoline 3634-67-1, Chlorotrihexylsilane 4655-61-2 6554-98-9, trans-4-Hydroxystilbene 7646-78-8, Tin tetrachloride, reactions 7790-94-5, Chlorosulfonic acid 9004-74-4, Poly(ethylene glycol)methyl ether 10026-04-7, Silicon tetrachloride 10038-98-9, Germanium tetrachloride 10264-67-2 17196-12-2 18156-15-5, Chloro(3-cyanopropyl)dimethylsilane 18162-48-6, tert-Butyldimethylchlorosilane 18419-53-9 18643-08-8, Chlorodimethyloctadecylsilane 19333-10-9, Silicon phthalocyanine dichloride 20082-71-7, Chlorodimethylpentfluorophenylsilane 25322-68-3, Poly(ethylene glycol) 26857-61-4 32703-80-3, 4-tert-Butylphthalonitrile 36360-42-6, 3,6-Diphenylphthalonitrile 37623-03-3, 1,4-Diphenylnaphthalene-2,3-dicarbonitrile 41345-70-4 52199-35-6 74815-81-9, 2,3-Dibromo-6,7-dicyanonaphthalene 97241-14-0 102488-47-1 105528-25-4 116453-89-5, 1,4-Dibutoxynaphthalene-2,3-dicarbonitrile 116453-91-9 139152-08-2 163969-13-9 163969-21-9 183872-68-6, 4,7-Diethoxy-1,3-diiminoisoindoline  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactant; fluorescence energy transfer and intramol. energy transfer in particles using novel compds., manufacture and use in assay of biomol.)

L113 ANSWER 3 OF 26 HCA COPYRIGHT 2004 ACS on STN

135:38954 Color filters, their manufacture by ink-jet printing, and liquid-crystal displays using them. Shirota, Kachihiro; Yamashita, Yoshihisa (Canon Inc., Japan). Jpn. Kokai Tokkyo Koho JP-2001159710A2 20010612, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-344028 19991203.

GI



AB The filters are manufactured by ink-jet printing blue inks containing phthalocyanine dyes I [Met = 2-4-valent metal ion, 2H; M = H, alkali metal, NH4; R1, R2 = H, (un)saturated hydrocarbyl; R1 ≠ H; m, n = 1-3; m + n ≤ 4] on transparent substrates to form colored

parts. The filters show good transparency and high light resistance and give LCD with good color display characteristics.

IT 16423-68-0, C.I. Acid Red 51 343797-94-4

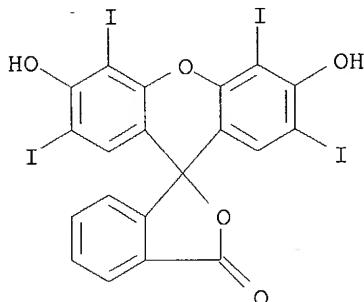
343797-95-5 343797-96-6 343797-97-7

RL: DEV (Device component use); USES (Uses)

(manufacture of transparent color filters by ink-jet printing of phthalocyanine dye-containing inks for LCD)

RN 16423-68-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-2',4',5',7'-tetrainodo-, disodium salt (9CI) (CA INDEX NAME)

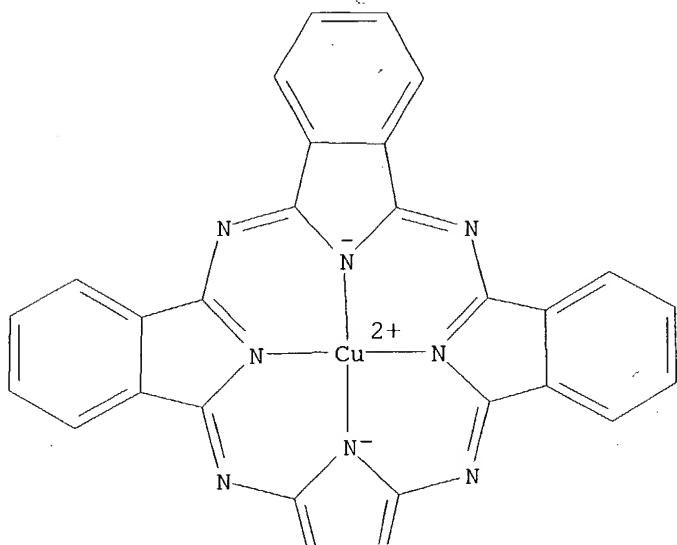


●2 Na

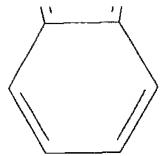
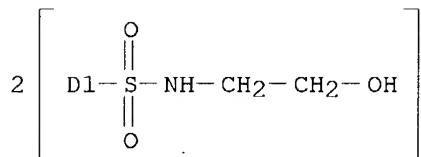
RN 343797-94-4 HCA

CN Cuprate(1-), [C,C-bis([(2-hydroxyethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)-κN29,κN30,κN31,κN32]-, sodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

D1-SO<sub>3</sub><sup>-</sup>

PAGE 3-A

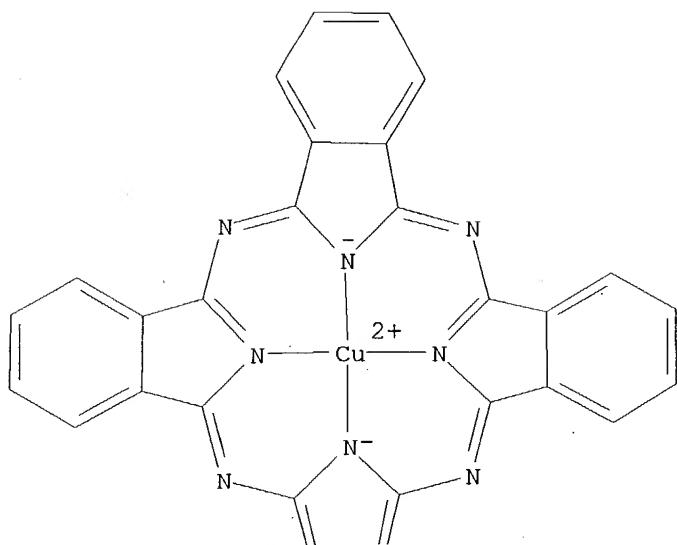
● Na<sup>+</sup>

RN 343797-95-5 HCA  
 CN Cuprate(3-), [C-[[(2-hydroxyethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(5-)-κN29,κN30,κN31,κN32]-, trisodium (9CI) (CA INDEX NAME)

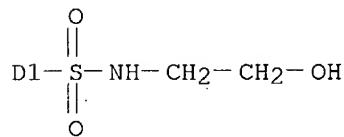
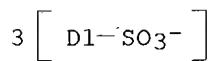
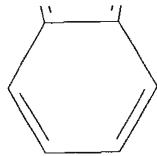
le 10/656,021

12/27/2004

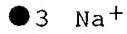
PAGE 1-A



PAGE 2-A



PAGE 3-A



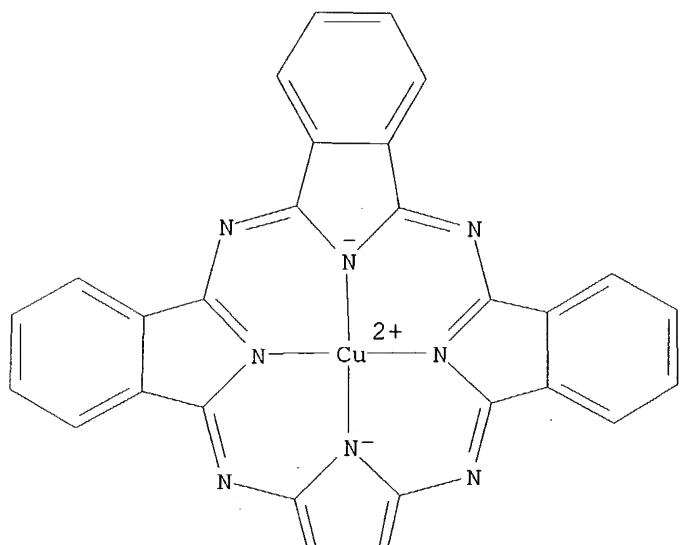
RN 343797-96-6 HCA  
CN Cuprate(2-), [C,C-bis[[bis(2-hydroxyethyl)amino]sulfonyl]-29H,31H-

le 10/656,021

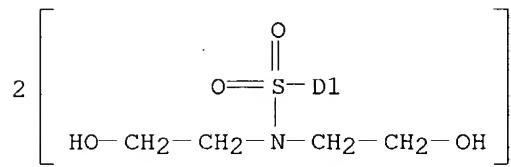
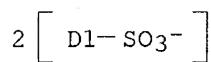
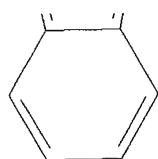
12/27/2004

phthalocyanine-C,C-disulfonato(6-) - $\kappa$ N29, $\kappa$ N30, $\kappa$ N31,. $\kappa$   
N32]-, disodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

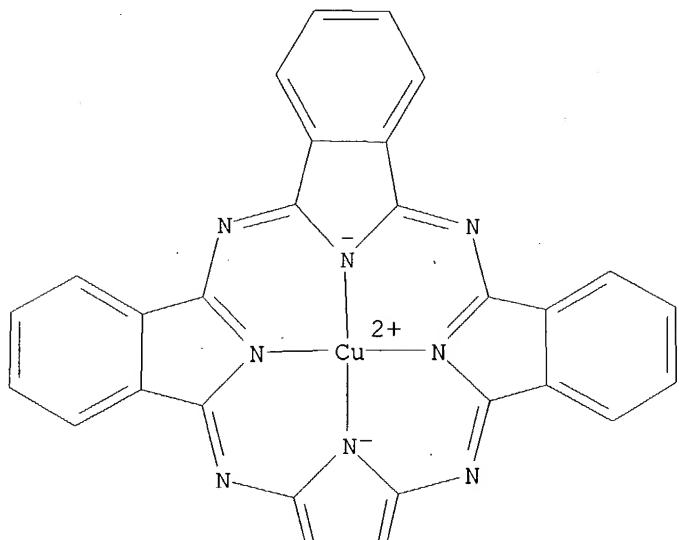


PAGE 3-A

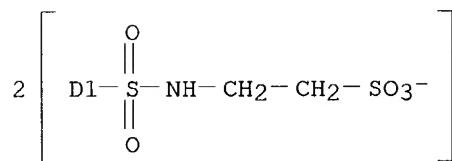
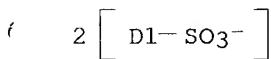
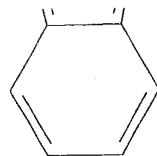
●2 Na<sup>+</sup>

RN 343797-97-7 HCA  
 CN Cuprate(4-), [C,C-bis[[(2-sulfoethyl)amino]sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(6-)-κN29,κN30,κN31,.κappa.N32]-, tetrasodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



PAGE 3-A

● 4  $\text{Na}^+$ 

IT 343797-92-2P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
 (manufacture of transparent color filters by ink-jet printing of phthalocyanine dye-containing inks for LCD)

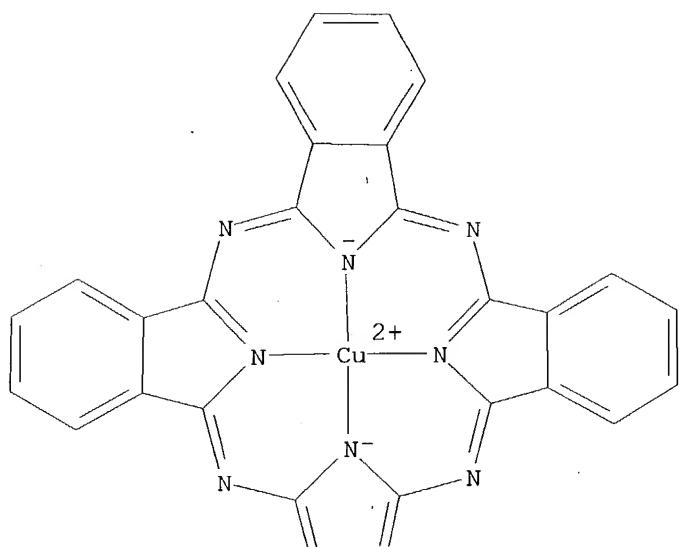
RN 343797-92-2 HCA

CN Cuprate(2-), [C,C-bis[[2-hydroxyethyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-κN29,κN30,κN31,.kappa.N32]-, disodium (9CI) (CA INDEX NAME)

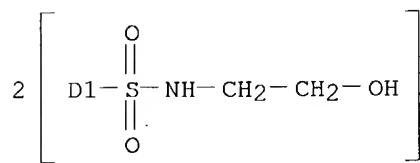
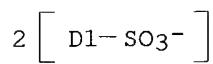
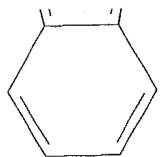
le 10/656,021

12/27/2004

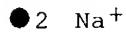
PAGE 1-A



PAGE 2-A



PAGE 3-A



IC ICM G02B005-20

Les Henderson

Page 20

571-272-2538

ICS G02F001-1335  
 CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and  
 Other **Rephotographic** Processes)  
 Section cross-reference(s): **41**, 73  
 IT 3520-42-1, C.I. Acid Red 52 12220-28-9, C.I. Acid Red 289  
**16423-68-0**, C.I. Acid Red 51 **343797-94-4**  
**343797-95-5** **343797-96-6** **343797-97-7**  
 RL: DEV (Device component use); USES (Uses)  
 (manufacture of transparent color filters by ink-jet printing of  
 phthalocyanine dye-containing inks for LCD)  
 IT **343797-92-2P**  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (manufacture of transparent color filters by ink-jet printing of  
 phthalocyanine dye-containing inks for LCD)

L113 ANSWER 4 OF 26 HCA COPYRIGHT 2004 ACS on STN

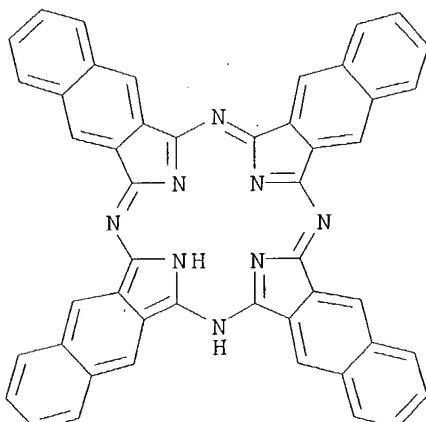
135:2542 Fluorescence energy transfer in particles. Buechler, Kenneth F.;  
 Noar, Joseph Barry; Tadesse, Lema (Biosite Diagnostics, Inc., USA). U.S.  
 US 6238931 B1 20010529, 30 pp., Cont.-in-part of U.S. Ser. No. 138,708,  
 abandoned. (English). CODEN: USXXAM. APPLICATION: US 1994-274534  
 19940712. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018.

AB Particles and methods for the detection or visualization of analytes using  
 fluorescence energy transfer are disclosed. Particles comprising an  
 energy donor as a first component and a fluorescent dye as a second  
 component positioned in said particles at an energy exchanging distance  
 from one another, wherein the two components have a Stokes shift of  
 greater than or equal to 50 nm, said particle having bound on its surface,  
 a protein, polypeptide, nucleic acid, nucleotide or protein containing ligand  
 analog are disclosed and claimed. A fluorescence immunoassay for human  
 chorionic gonadotropin (hCG) uses a conjugate of anti-hCG monoclonal  
 antibody and latex particles containing 1,1'-dihexyl-3,3',3'-  
 tetramethylindodicarbocyanine iodide and silicon 2,3-  
**naphthalocyanine** bis(dimethylvinylsilyloxy) (preparation given).

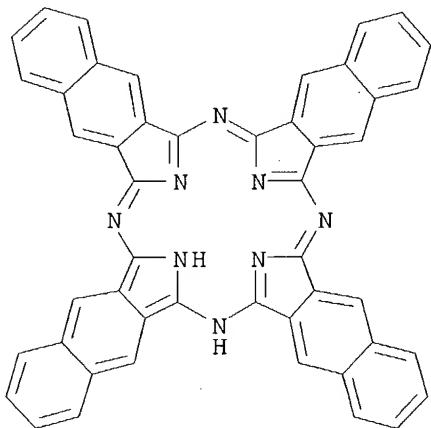
IT 23627-89-6, **Naphthalocyanine 23627-89-6D**,  
**Naphthalocyanine**, substituted  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (fluorescence energy transfer in particles)

RN 23627-89-6 HCA

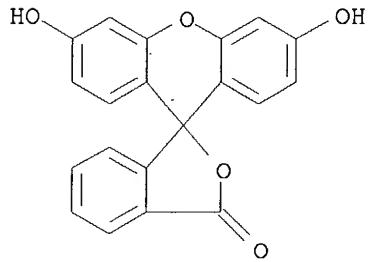
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine  
 (9CI) (CA INDEX NAME)



RN 23627-89-6 HCA  
 CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine  
 (9CI) (CA INDEX NAME)

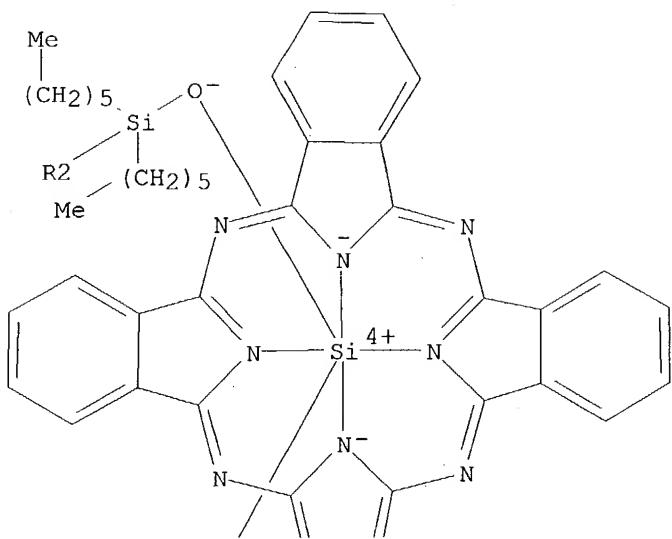


IT 2321-07-5, Fluorescein  
 RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical study); USES (Uses)  
 (fluorescence energy transfer in particles)  
 RN 2321-07-5 HCA  
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
 (CA INDEX NAME)

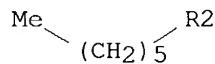
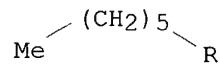
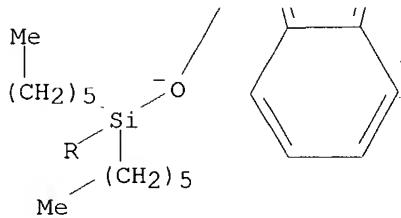


IT 92396-89-9P  
 RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)  
 (fluorescence energy transfer in particles)  
 RN 92396-89-9 HCA  
 CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.κappa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

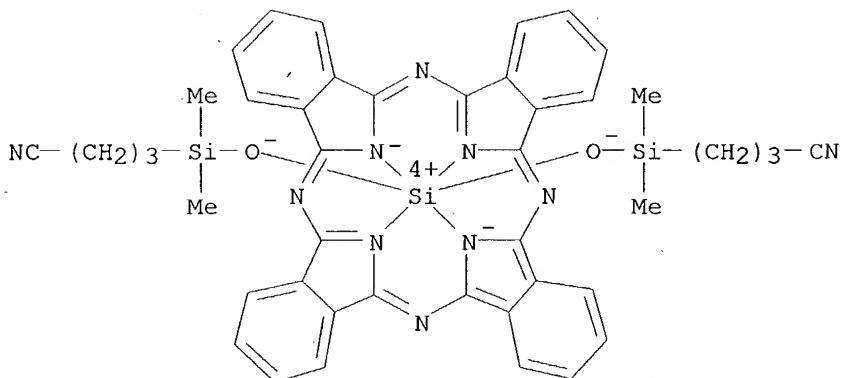


IT 163969-08-2P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)  
(fluorescence energy transfer in particles)

RN 163969-08-2 HCA

CN Silicon, bis[4-[ (hydroxy- $\kappa$ O)dimethylsilyl]butanenitrilato][29H,31H-phthalocyaninato(2-)- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]-,  
(OC-6-12)- (9CI) (CA INDEX NAME)

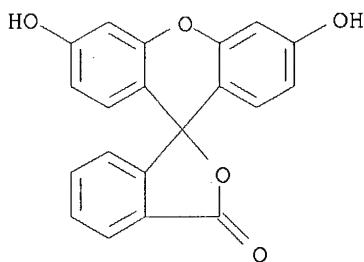


IT 2321-07-5D, Fluorescein, reaction with ATP and phthalocyanine compds. 92396-91-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
(fluorescence energy transfer in particles)

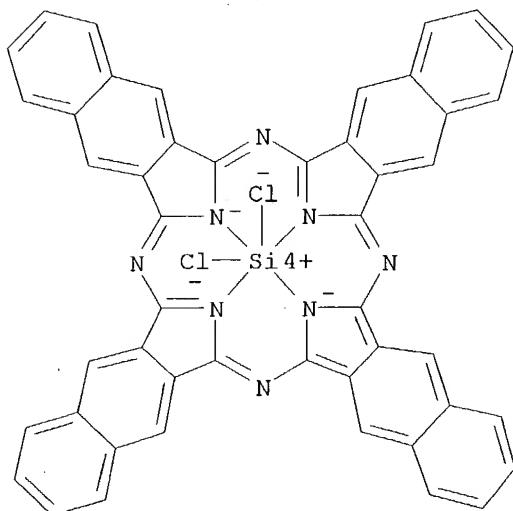
RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
(CA INDEX NAME)



RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrinato(2-)-κN37,κN38,κN39,κN40]-, (OC-6-12)- (9CI) (CA INDEX NAME)

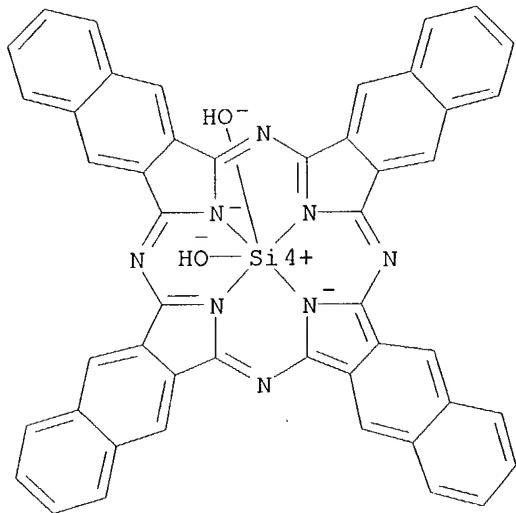


IT 92396-90-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(fluorescence energy transfer in particles)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrzinato(2-)-κN37,κN38,κN39,κN40]-,  
(OC-6-12)- (9CI) (CA INDEX NAME)



IC ICM G01N033-533

ICS G01N033-546; G01N033-552; C07K017-08

NCL 436546000

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 2, 29, 41, 73

IT 479-61-8 574-93-6D, Phthalocyanine, substituted 23178-68-9D,  
3,3'-Diethylthiatricarbocyanine, salts 23481-50-7D, 1,9-  
Dimethylmethylene blue, salts 23627-89-6,

**Naphthalocyanine 23627-89-6D, Naphthalocyanine**

, substituted 47676-39-1D, 1,1',3,3,3',3'-Hexamethylindotricarbocyanine,  
salts 47809-39-2D, salts 83683-61-8D, salts 127274-90-2D, salts  
143236-82-2D, salts 163969-02-6D, salts 163969-03-7D, salts  
163969-05-9D, salts 342046-44-0D, salts

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(fluorescence energy transfer in particles)

IT 519-62-0, Chlorophyll B 2321-07-5, Fluorescein 3071-70-3,  
3,3'-Diethylthiatricarbocyanine iodide 14806-50-9, 3,3'-  
Diethyloxadicarbocyanine Iodide 16595-48-5, 1,1',3,3,3',3'-Hexamethyl  
indotricarbocyanine perchlorate 17094-16-5 23178-67-8 23481-50-7  
24796-94-9, Oxazine 1 Perchlorate 39001-62-2 39001-64-4 52199-35-6  
53213-94-8, 3,3'-Dipropylthiadadicarbocyanine iodide 70365-30-9  
77474-65-8 78452-92-3 83218-82-0 83484-76-8 83678-65-3  
85752-56-3 97807-64-2 116453-73-7 127274-91-3, 1,1'-Dioctadecyl-  
3,3,3',3'-tetramethylindodadicarbocyanine perchlorate 129707-63-7  
150749-57-8 163968-82-9 163968-86-3 163969-09-3 163969-13-9  
163969-14-0 164106-16-5 342046-49-5 342046-58-6 342373-97-1

RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical  
study); USES (Uses)  
(fluorescence energy transfer in particles)

IT 68812-20-4P **92396-89-9P** 163968-89-6P 163969-10-6P  
 RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)  
 (fluorescence energy transfer in particles)

IT 163969-07-1P **163969-08-2P** 163969-12-8P  
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)  
 (fluorescence energy transfer in particles)

IT 56-65-5D, ATP, reaction with fluorescein 68-26-8, all-trans-Retinol  
 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane  
 1585-90-6, N-(2-Hydroxyethyl)maleimide 1719-58-0,  
 Chlorodimethylvinylsilane **2321-07-5D**, Fluorescein, reaction with  
 ATP and phthalocyanine compds. 3634-67-1, Chlorotrihexylsilane  
 6554-98-9, trans-4-Hydroxystilbene 10026-04-7, Silicon tetrachloride  
 18156-15-5, Chloro(3-cyanopropyl)dimethylsilane 18419-53-9 19333-10-9,  
 Silicon phthalocyanine dichloride 20082-71-7,  
 Chlorodimethylpentaphenylsilane 53749-38-5, (10-  
 Carbomethoxydecyl)dimethylchlorosilane **92396-91-3** 102488-47-1  
 163968-99-8, 4,9-Diethoxy-1,3-diiminobenz[f]isoindoline 342046-56-4  
 342373-96-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (fluorescence energy transfer in particles)

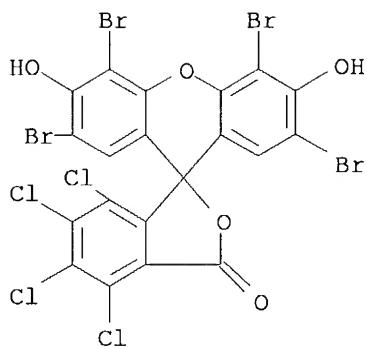
IT 19333-15-4P, Silicon Phthalocyanine Dihydroxide **92396-90-2P**  
 163969-16-2P 163969-17-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (fluorescence energy transfer in particles)

L113 ANSWER 5 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 132:71457 Color filter for liquid-crystal display panel. Nakazawa, Koichiro;  
 Shiota, Katsuhiro; Miyazaki, Takeshi; Kashiwazaki, Akio; Hirose, Masashi  
 (Canon K. K., Japan). Eur. Pat. Appl. EP-965874 A2 19991222, 50 pp.  
 DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL,  
 SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW.  
 APPLICATION: EP 1999-111660 19990616. PRIORITY: JP 1998-171404 19980618.  
 AB A color filter for a liquid-crystal display panel comprises red, green, and  
 blue color elements with a relationship between a tristimulus value (Y) of  
 a white color synthesized by the color elements and an area (S) for a  
 triangle formed by connecting the xy chromaticity in the standard C light  
 source of the above color elements each obtained based on a XYZ color  
 system with a 2° visual field (JIS Z8701) meeting the condition of  

$$Y \geq -255 \cdot S + 54.$$

IT **18472-87-2**, C.I. Acid Red 92 **245726-55-0**  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (liquid-crystal display panels with color filters containing)

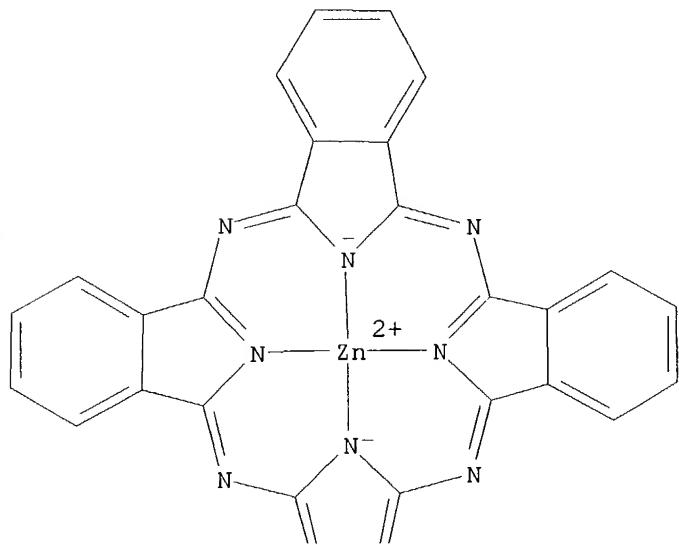
RN 18472-87-2 HCA  
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthan]-3-one, 2',4',5',7'-tetrabromo-  
 4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



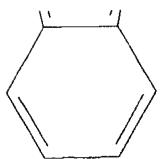
●2 Na

RN 245726-55-0 HCA  
 CN Zincate(2-), [C-[[[(acetylamino)-4-[[5-(aminocarbonyl)-1-butyl-1,6-dihydro-2-hydroxy-4-methyl-6-oxo-3-pyridinyl]azo]-3-sulfophenyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C-sulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX  
 NAME)

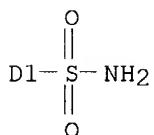
PAGE 1-A



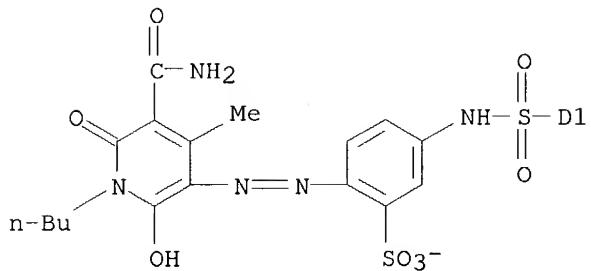
PAGE 2-A



D1-NH-Ac

D1-SO<sub>3</sub><sup>-</sup>

PAGE 3-A

●2 Na<sup>+</sup>

IC ICM G02F001-1335

ICS G02B005-22; C09D011-00

CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)

Section cross-reference(s): 73

IT 147-14-8D, Copper phthalocyanine, sulfonate-sulfonamide derivs.

1330-39-8, C.I. Direct Blue 87 12220-28-9, C.I. Acid Red 289

12220-47-2, C.I. Acid Red 315 12222-04-7, C.I. Direct Blue 199

14320-04-8D, Zinc phthalocyanine, sulfonate-sulfonamide derivs.

**18472-87-2**, C.I. Acid Red 92 26603-03-2D, sulfonic acid derivs.,sodium salts 245724-63-4 245724-65-6 245724-68-9 **245726-55-0**

245761-49-3 245761-53-9 245761-55-1 245761-66-4 247103-66-8D,

sulfonic acid derivs., sodium salts 247103-69-1D, sulfonic acid derivs.,

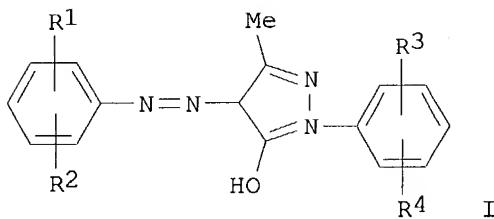
sodium salts

RL: DEV (Device component use); TEM (Technical or engineered material)

use); USES (Uses)  
(liquid-crystal display panels with color filters containing)

L113 ANSWER 6 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 131:279367 Ink, color filter, liquid crystal panel, and computer, and process  
 for producing color filter. Kashiwazaki, Akio; Shirota, Katsuhiro;  
 Nakazawa, Koichiro; Hirose, Masashi; Yokoyama, Mayumi; Yamashita,  
 Yoshihisa (Canon Kabushiki Kaisha, Japan). Eur. Pat. Appl. EP-9478593A1  
 19991006, 33 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB,  
 GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English).  
 CODEN: EPXXDW. APPLICATION: EP 1999-106587 19990331. PRIORITY: JP  
 1998-86227 19980331.

GI



AB The invention relates to an ink for ink-jet recording, a color filter of a liquid crystal color display device used in color television, personal computers and the like, a process for producing the color filter and a liquid crystal panel employing the color filter. Provided is a novel ink which is suitable for producing a color filter by an ink-jet system. The ink comprises a pyrazolone dye (I), where R1 and R2 are each independently a H atom, an OH group, a halogen atom, a linear or branched alkyl group having 1 to 5 C atoms, a nitro group, a CF<sub>3</sub> group or an SO<sub>3</sub>(M<sub>1</sub>) group, where M<sub>1</sub> is an alkali metal or NH<sub>4</sub>; both R3 and R4 are an SO<sub>3</sub>(M<sub>2</sub>) group, where M<sub>2</sub> is an alkali metal or NH<sub>4</sub>.

IT 245726-55-0

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of color filter of liquid crystal display device using)

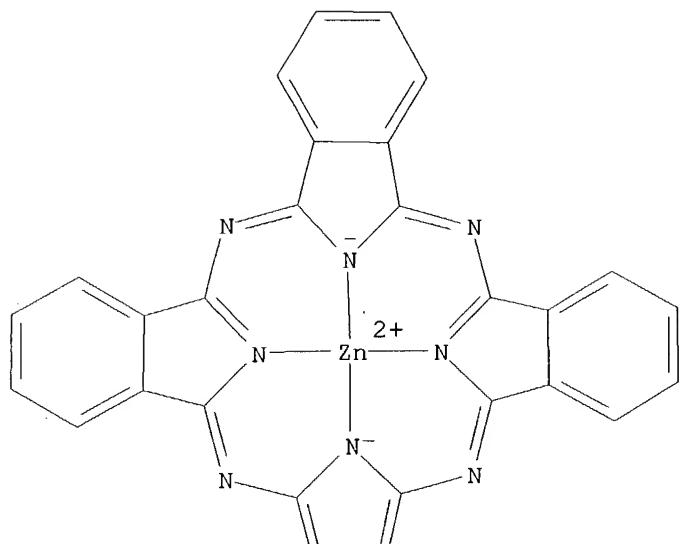
RN 245726-55-0 HCA

CN Zincate(2-), [C-[[[[acetylamino)-4-[[5-(aminocarbonyl)-1-butyl-1,6-dihydro-2-hydroxy-4-methyl-6-oxo-3-pyridinyl]azo]-3-sulfonyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C-sulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX  
NAME)

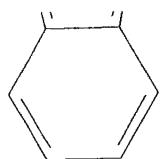
le 10/656,021

12/27/2004

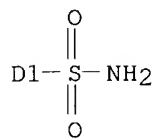
PAGE 1-A



PAGE 2-A

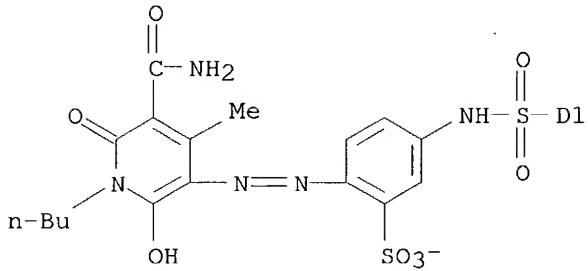


D1-NH-Ac



D1-SO3-

PAGE 3-A

●2 Na<sup>+</sup>

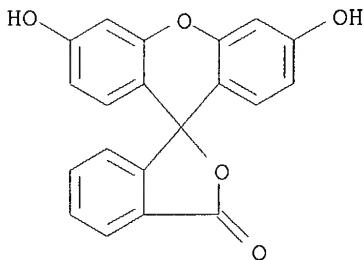
IT 518-47-8, C.I. Acid Yellow 73

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of ink containing pyrazolone dye for ink-jet recording or color filter of liquid crystal display device using)

RN 518-47-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

IC ICM G02B005-22

ICS G02F001-1335; C09B029-50

CC 74-13 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)

Section cross-reference(s): 41, 42

IT 245726-55-0

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of color filter of liquid crystal display device using)

IT 518-47-8, C.I. Acid Yellow 73 219679-25-1, N-Methylolacrylamide-2-(dimethylamino)ethyl methacrylate-methyl methacrylate-2-hydroxyethyl methacrylate-acrylic acid copolymer 245724-59-8 245724-60-1 245724-61-2 245724-62-3 245724-63-4 245724-64-5 245724-65-6 245724-66-7 245724-67-8 245724-68-9 245724-69-0 245724-70-3 245724-72-5

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(preparation of ink containing pyrazolone dye for ink-jet recording or color filter of liquid crystal display device using)

L113 ANSWER 7 OF 26 HCA COPYRIGHT 2004 ACS on STN

129:317583 Hybrid phthalocyanine derivatives and their uses in immunoassays and nucleic acid assays. Buechler, Kenneth F.; Noar, Joseph B.; Tadesse, Lema (Biosite Diagnostics Incorporated, USA). U.S. US-5824799-A 19981020, 57 pp., Cont.-in-part of U.S. Ser. No. 274,534. (English). CODEN: USXXAM. APPLICATION: US 1996-620597 19960322. PRIORITY: US 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712; US 1994-311098 19940923; US 1995-409825 19950323.

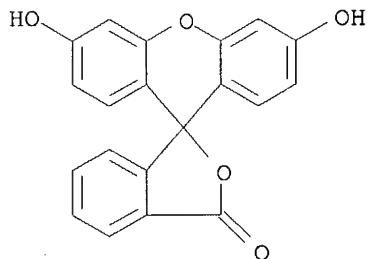
AB Water soluble hybrid phthalocyanine derivs. having (1) at least one donor subunit with a desired excitation peak and (2) at least one acceptor subunit with a desired emission peak, wherein the derivs. are capable of intramol. energy transfer from the donor subunit to the acceptor subunit, are synthesized. Such derivs. also may contain an electron transfer subunit. Axial ligands may be covalently bound to the metals contained in the water soluble hybrid phthalocyanine derivs. Ligands, ligand analogs, polypeptides, proteins, and nucleic acids can be linked to the axial ligands of the dyes to form dye conjugates useful in immunoassays and nucleic acid assays.

IT 2321-07-5

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI) (CA INDEX NAME)



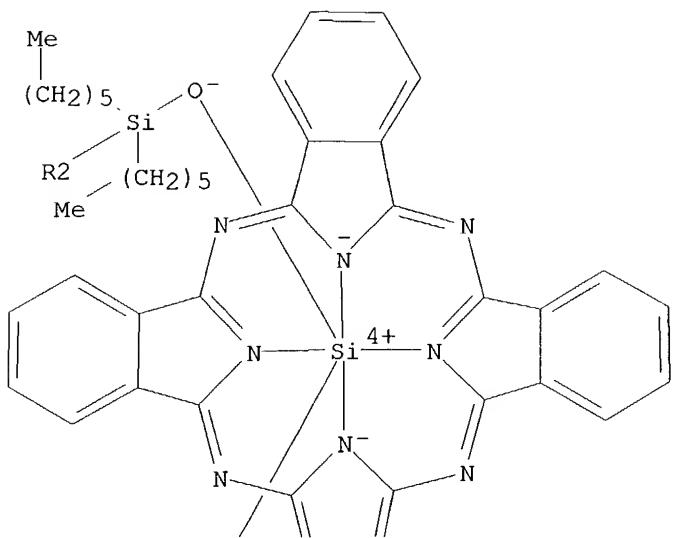
IT 92396-89-9P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses) (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

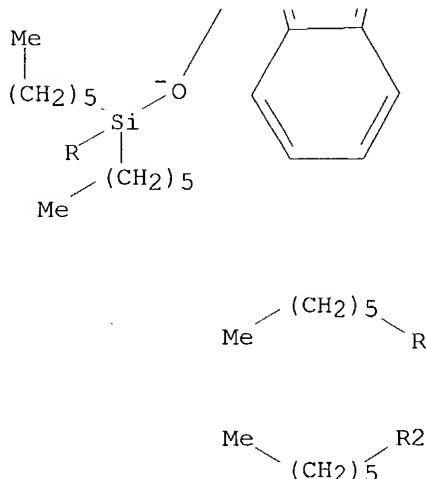
RN 92396-89-9 HCA

CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.κappa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

PAGE 1-A

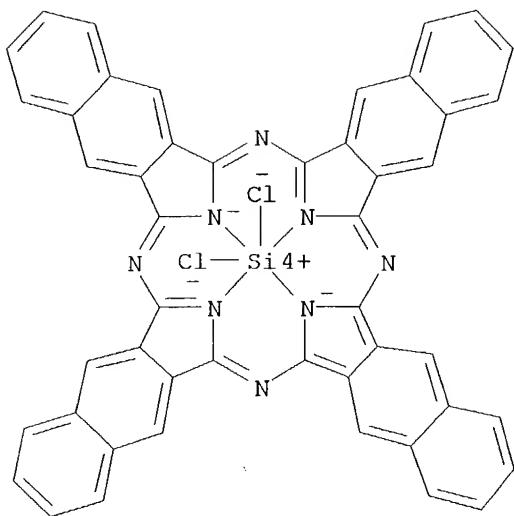


PAGE 2-A

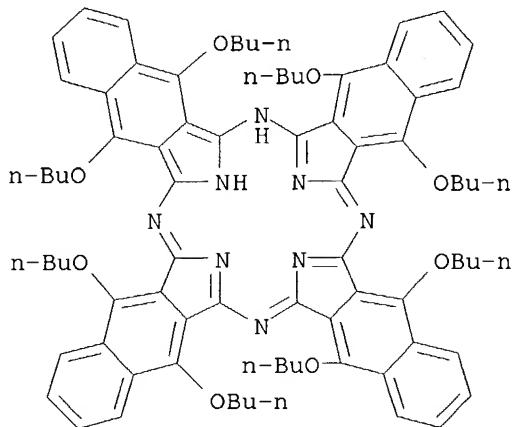


IT 92396-91-3 105528-25-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

RN 92396-91-3 HCA  
 CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrzinato(2-)-κN37,κN38,κN39,κN40]⁻,  
 (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

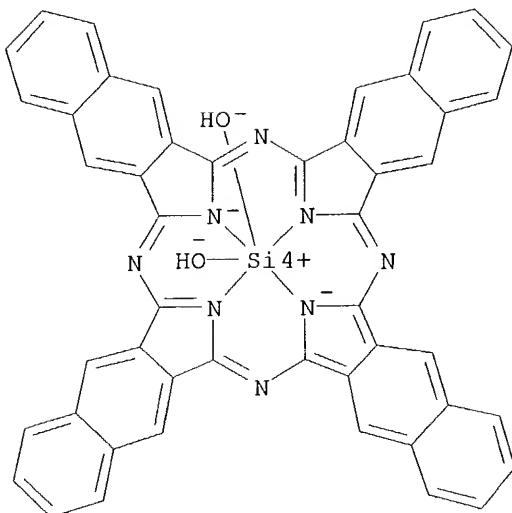
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazine,  
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)

IT 92396-90-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
nucleic acid assays)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,  
(OC-6-12)- (9CI) (CA INDEX NAME)



IT 209161-25-1P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

RN 209161-25-1 HCA

CN Silicon, bis[3-[(hydroxy- $\kappa$ O)dimethylsilyl]propanenitrilato][29H,31H-  
 phthalocyaninato(2-)- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]-,  
 (OC-6-12)- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C09B047-00

ICS C09B047-30; C07D487-22

NCL 540128000

CC 41-7 (Dyes, Organic Pigments, Fluorescent Brighteners, and  
 Photographic Sensitizers)

IT 514-73-8 519-62-0 2321-07-5 3071-70-3 16595-48-5  
 23178-67-8 23481-50-7 24796-94-9 26529-11-3 39001-62-2  
 52199-35-6 53213-94-8 70365-30-9 83484-76-8 83768-56-3  
 85752-56-3 97148-81-7 97807-64-2 116453-73-7 127274-91-3  
 129707-63-7 150749-57-8 163968-82-9 163968-85-2 171118-93-7  
 195203-87-3 209161-37-5 209161-39-7

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

IT 68-26-8P, Retinol 68812-20-4P 92396-89-9P 163968-88-5P  
 163968-89-6P 163968-92-1P 163968-94-3P 163968-95-4P 163969-09-3P  
 163969-10-6P 163969-14-0P 183872-63-1P 209161-30-8P 209161-31-9P  
 209161-33-1P

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST  
 (Analytical study); PREP (Preparation); USES (Uses)  
 (preparation of hybrid phthalocyanine derivs. for uses in immunoassays and  
 nucleic acid assays)

IT 75-78-5 76-86-8 597-52-4 1631-83-0 1719-58-0 1835-65-0  
 3468-11-9 3634-67-1 6554-98-9 7646-78-8, reactions 10026-04-7  
 10038-98-9 10264-67-2 17196-12-2 18156-15-5 19333-10-9  
 20082-71-7 26857-61-4 32703-80-3 37623-03-3 53749-38-5  
 74815-81-9 92396-91-3 102488-47-1 105528-25-4  
 116453-89-5 183872-68-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 652-11-9P 19333-15-4P 52319-97-8P **92396-90-2P** 163968-99-8P  
 163969-16-2P 163969-17-3P 163969-19-5P 163969-21-9P 163969-23-1P  
 183872-52-8P 183872-54-0P 183872-58-4P 183872-64-2P 209161-29-5P  
 209161-32-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

IT 83218-82-0P 117753-12-5P 163968-91-0P 163969-00-4P 163969-01-5P  
 163969-07-1P 163969-11-7P 163969-15-1P 163969-20-8P 163969-26-4P  
 171118-94-8P 183872-48-2P 183872-49-3P 183872-51-7P 183872-56-2P  
 183872-57-3P 183872-59-5P 183872-66-4P 183872-67-5P 183973-61-7P  
**209161-25-1P**

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of hybrid phthalocyanine derivs. for uses in immunoassays and nucleic acid assays)

L113 ANSWER 8 OF 26 HCA COPYRIGHT 2004 ACS on STN

127:88091 Ink-jet printing method using ink containing water-soluble dye.  
 Owatari, Akio; Onishi, Hiroyuki (Seiko Epson Corp., Japan). Jpn. Kokai Tokkyo Koho JP-09123594, A2 19970513 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-283787 19951031.

AB Ink-jet printing method using (1) an ink with pH  $\geq 7$  containing a water-soluble dye with COOX and/or PO<sub>3</sub>X (X = H, Li, K, Na, ammonium, amine) groups, a water-soluble organic solvent, and water, and (2) a receptor having an ink receiving layer with pH  $\leq 7$  containing porous alumina particles is claimed. The method gives clear full-color images with good storage stability under high moisture conditions.

IT **173429-41-9 191475-67-9**

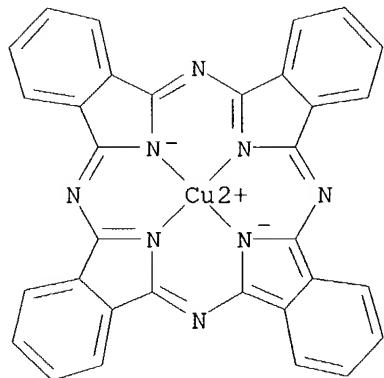
RL: TEM (Technical or engineered material use); USES (Uses)

(ink-jet printing method using water-soluble dye-containing ink and alumina-containing receptor)

RN 173429-41-9 HCA

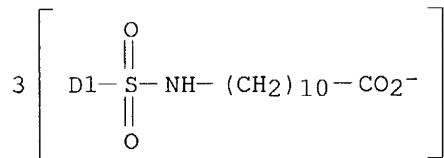
CN Cuprate(4-), [[11,11',11''-[(C-sulfo-29H,31H-phthalocyanine-C,C,C-triyl- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32)tris(sulfonylimino)]tris[undecanoato]](6-)], ammonium trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



D1- SO3-

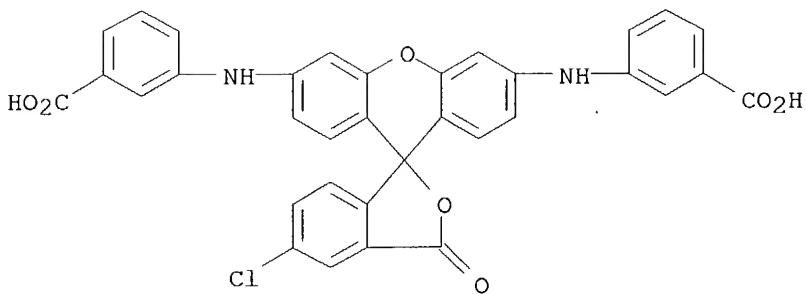
PAGE 2-A



● 3 H+

● NH4+

RN 191475-67-9 HCA  
 CN Benzoic acid, 3,3'-(5-chloro-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3',6'-diyl)diimino]bis-, diammonium salt (9CI) (CA INDEX NAME)



●2 NH3

IC ICM B41M005-00

ICS B41M005-00; B41J002-01; C09D011-00

CC 74-6 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Rephotographic** Processes)

Section cross-reference(s): 41

IT 140668-23-1 145687-46-3 **173429-41-9** 191475-67-9

191475-69-1 191475-71-5 191475-73-7

RL: TEM (Technical or engineered material use); USES (Uses)  
(ink-jet printing method using water-soluble dye-containing ink and alumina-containing receptor)

L113 ANSWER 9 OF 26 HCA COPYRIGHT 2004 ACS on STN

124:205237 Inks with good storage stability and jet printing using them and printing apparatus for the inks. Yamamoto, Mayumi (Canon Kk, Japan).

Jpn. Kokai Tokkyo Koho JP=07305014=A2: 19951121 Heisei, 17 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1994-117425 19940509.

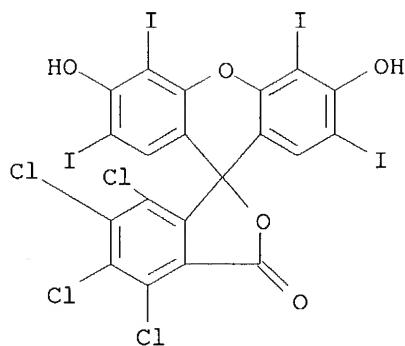
AB Title inks with resistance to nozzle clogging contain H2O-soluble dyes, liquid media, C8-17 fatty acid salts, and H2O-soluble organic compds. containing  $\geq 6$  hydrocarbon groups and  $\geq 2$  N and are useful for prints with good sharpness and water resistance. An ink containing ethylene glycol 10, glycerol 10, urea 10, Me2CHOH 3, phenyltriethylenetetramine 2, Na caprylate 0.3, C.I. Acid Red 87 2, and H2O 63.7 parts was storage stable and exhibited prints with sharp edges and no feathering.IT **632-68-8**, C.I. Acid Red 94 **12225-39-7**, C.I. ReactiveBlue 15 **12238-09-4**, C.I. Reactive Blue 7 **18472-87-2**,

C.I. Acid Red 92

RL: TEM (Technical or engineered material use); USES (Uses)  
(jet-printing inks with good storage stability containing; for prints with good water resistance and sharpness)

RN 632-68-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetraiodo-, dipotassium salt (9CI) (CA INDEX NAME)

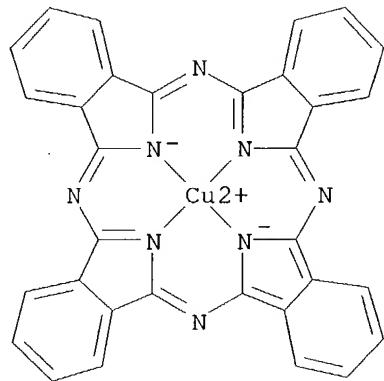


●2 K

RN 12225-39-7 HCA

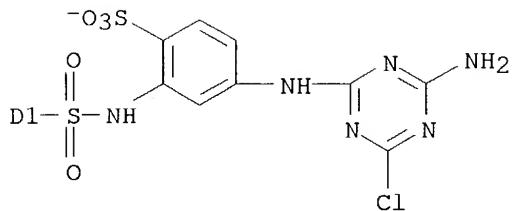
CN Cuprate(4-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA  
INDEX NAME)

PAGE 1-A



$$3 \left[ \text{D1-} \text{SO}_3^- \right]$$

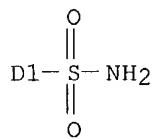
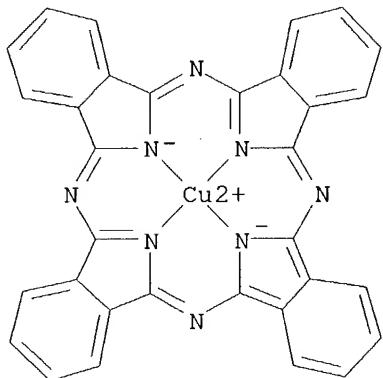
PAGE 2-A

● 4 Na<sup>+</sup>

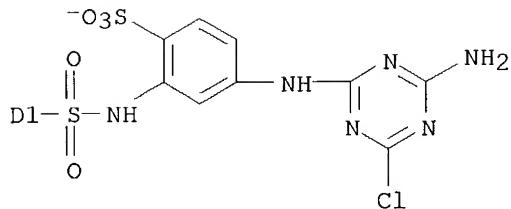
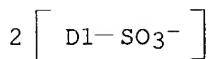
RN 12238-09-4 HCA

CN Cuprate(3-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-C-(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(5-)-κN29,κN30,κN31,κN32]-, trihydrogen  
(9CI) (CA INDEX NAME)

PAGE 1-A

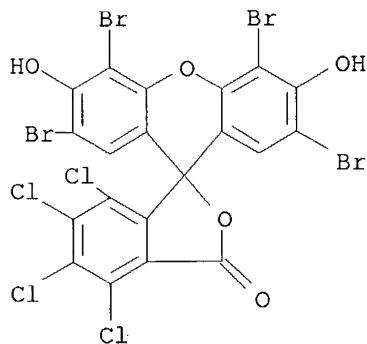


PAGE 2-A



3 H<sup>+</sup>

RN 18472-87-2 HCA  
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



● 2 Na

IC ICM C09D011-00  
ICS B41J002-01; B41M005-00  
CC 42-12 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 74  
IT 629-25-4, Sodium laurate **632-68-8**, C.I. Acid Red 94 1002-62-6,  
Sodium caprate 1324-58-9, C.I. Direct Blue 108 2437-23-2, Ammonium  
laurate 3700-59-2, Lauryldiethylenetriamine 5538-95-4,  
Laurylaminopropylamine 5972-76-9, Ammonium caprylate 6843-97-6, Lebon  
15 8005-03-6, C.I. Acid Black 2 12220-28-9, C.I. Acid Red 289  
12222-04-7, C.I. Direct Blue 199 **12225-39-7**, C.I. Reactive Blue  
15 12236-85-0, C.I. Reactive Blue 14 **12238-09-4**, C.I. Reactive  
Blue 7 14047-60-0, Sodium pelargonate 16530-70-4, Ammonium caprate  
**18472-87-2**, C.I. Acid Red 92 30989-89-0,  
Tetradecyldiethylenetriamine 32582-95-9, Ammonium undecanoate  
56166-93-9, Lauryltetraethylenepentamine 63718-65-0, Ammonium

pelargonate 91301-74-5, Lebon 50 157609-34-2 172210-93-4  
 172451-43-3, Lebon LAG 40 173268-66-1, Eleminol Ran 30 174460-80-1  
 174460-81-2

RL: TEM (Technical or engineered material use); USES (Uses)  
 (jet-printing inks with good storage stability containing; for prints with  
 good water resistance and sharpness)

L113 ANSWER 10 OF 26 HCA COPYRIGHT 2004 ACS on STN

124:4485 Fluorescence energy transfer and intramolecular energy transfer in  
 particles using novel compounds. Buechler, Kenneth Francis; Noar, Joseph  
 Barry; Tadesse, Lema (Biosite Diagnostics Inc., USA). PCT Int. Appl. WO  
 9508772 A1 19950330, 138 pp. DESIGNATED STATES: W: AU, CA, JP; RW: AT,  
 BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English).  
 CODEN: PIXXD2. APPLICATION: WO 1994-US10826 19940923. PRIORITY: US  
 1993-126367 19930924; US 1993-138708 19931018; US 1994-274534 19940712.

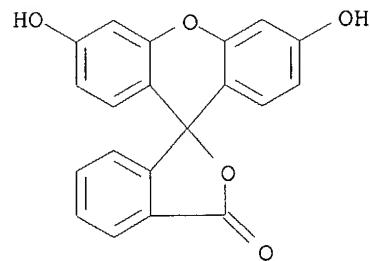
AB Particles and methods are disclosed for the detection or visualization of  
 analytes, including nucleic acids by using fluorescence energy transfer or  
 intramol. energy transfer. Particles comprising an energy donor as a  
 first component and a fluorescent dye as a second component positioned in  
 said particles at an energy exchanging distance from one another, wherein  
 the two components have a Stokes shift of  $\geq 50$  nm, said particle  
 having bound on its surface, a protein, polypeptide, nucleic acid,  
 nucleotide or protein containing ligand analog are disclosed and claimed. In  
 addition, novel fluorescent dyes are described which exhibit intramol. energy  
 transfer for use in labeling various mols., proteins, polypeptides,  
 nucleotides and nucleic acids or incorporating into particles. Many novel  
 phthalocyanine derivs. and hybrid phthalocyanine derivs. are disclosed and  
 claimed. Such derivs. also may contain an electron transfer subunit.  
 Axial ligands may be covalently bound to the metals contained in the  
 hybrid phthalocyanine derivs. Numerous compds. capable of intramol.  
 energy transfer as well as compds. for fluorescence energy transfer are  
 claimed.

IT 2321-07-5 163968-87-4 171118-92-6D, reaction  
 with silicon phthalocyanine

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (fluorescence and intramol. energy transfer in particles for biochem.  
 anal.)

RN 2321-07-5 HCA

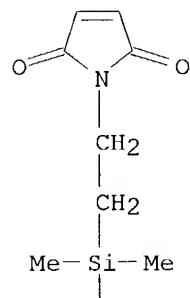
CN Spiro[isobenzofuran-1(3H), 9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
 (CA INDEX NAME)



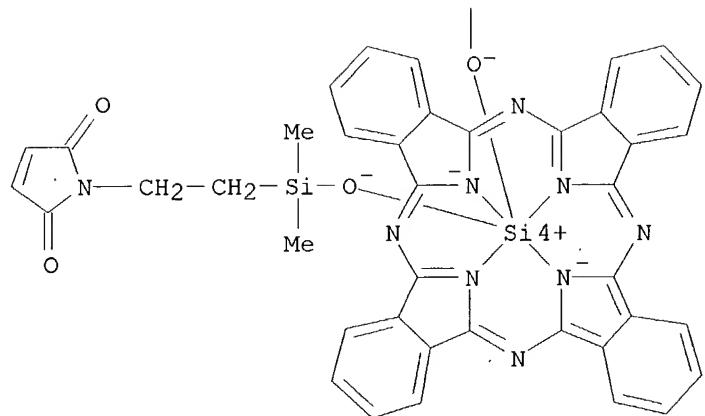
RN 163968-87-4 HCA

CN Silicon, bis[1-[2-(hydroxydimethylsilyl)ethyl]-1H-pyrrole-2,5-dionato-  
 O1][29H,31H-phthalocyaninato(2)-N29,N30,N31,N32]-, (OC-6-12)- (9CI) (CA  
 INDEX NAME)

PAGE 1-A

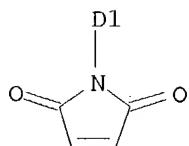
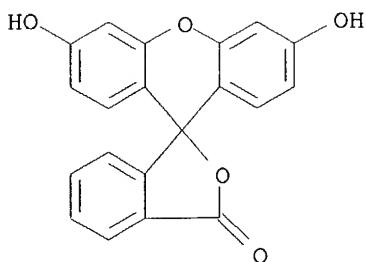


PAGE 2-A



RN 171118-92-6 HCA

CN 1H-Pyrrole-2,5-dione, 1-[3',6'-dihydroxy-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthen]-5(or 6)-yl]- (9CI) (CA INDEX NAME)



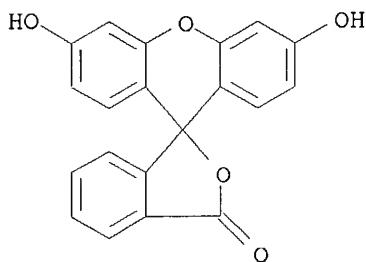
IT 2321-07-5D, complex with ATP 92396-91-3

105528-25-4

RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);  
 RACT (Reactant or reagent); USES (Uses)  
 (fluorescence and intramol. energy transfer in particles for biochemical.  
 anal.)

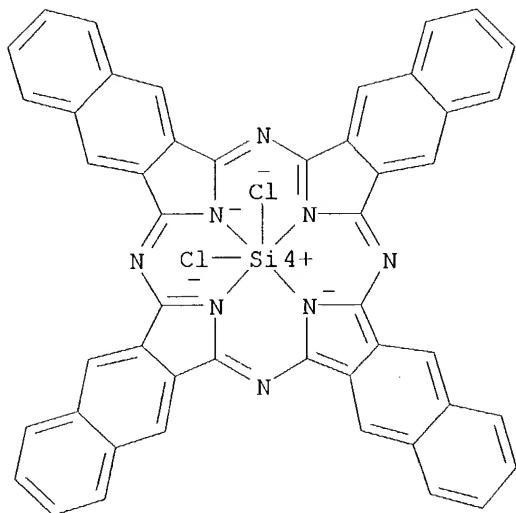
RN 2321-07-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
 (CA INDEX NAME)

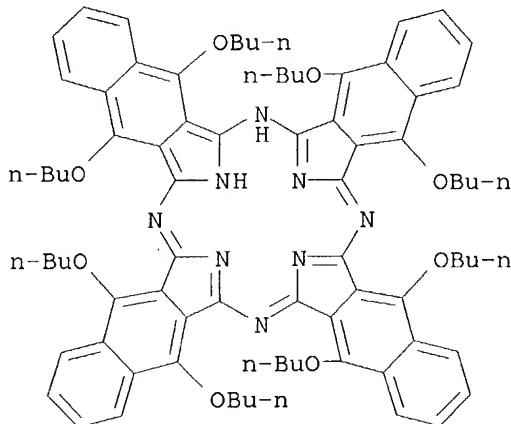


RN 92396-91-3 HCA

CN Silicon, dichloro[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-1:2''',3'''-  
 q]porphyrazinato(2-) -κN37,κN38,κN39,κN40]-,  
 (OC-6-12)- (9CI) (CA INDEX NAME)



RN 105528-25-4 HCA

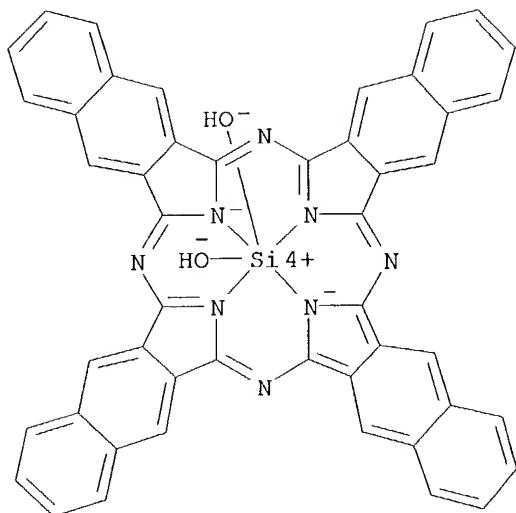
CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine,  
5,9,14,18,23,27,32,36-octabutoxy- (9CI) (CA INDEX NAME)

IT 92396-90-2P

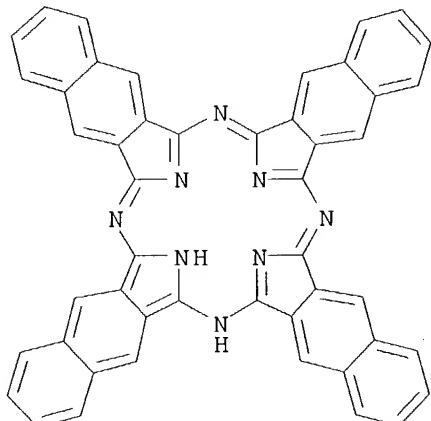
RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(fluorescence and intramol. energy transfer in particles for biochemical anal.)

RN 92396-90-2 HCA

CN Silicon, dihydroxy[37H,39H-tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazinato(2-)-κN37,κN38,κN39,κN40]-,  
(OC-6-12)- (9CI) (CA INDEX NAME)

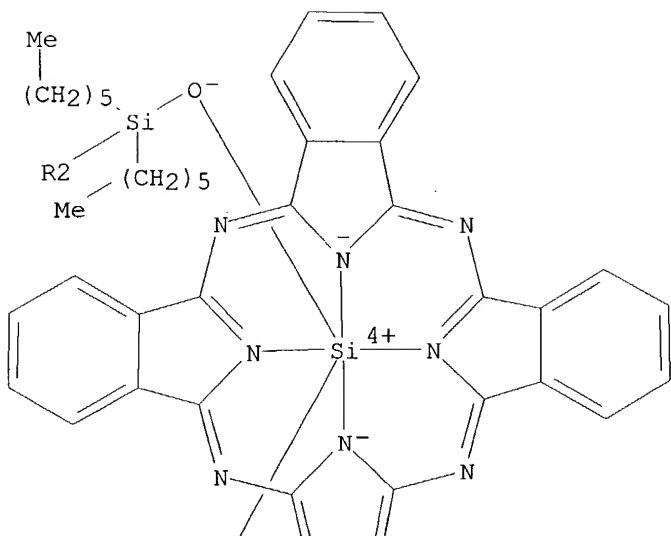


IT 23627-89-6DP, Naphthalocyanine, derivs.  
 92396-89-9P 163969-08-2P 171205-26-8DP,  
 reaction with silicon phthalocyanine  
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST  
 (Analytical study); PREP (Preparation); USES (Uses)  
 (fluorescence and intramol. energy transfer in particles for biochem.  
 anal.)  
 RN 23627-89-6 HCA  
 CN 37H,39H-Tetranaphtho[2,3-b:2',3'-g:2'',3''-l:2''',3'''-q]porphyrazine  
 (9CI) (CA INDEX NAME)

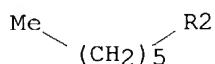
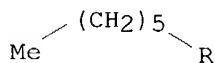
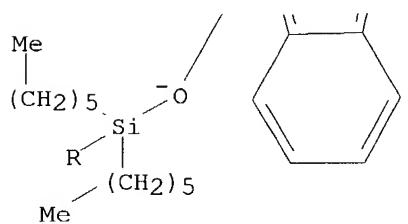


RN 92396-89-9 HCA  
 CN Silicon, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.κ  
 appa.N32]bis(trihexylsilanolato)-, (OC-6-12)- (9CI) (CA INDEX NAME)

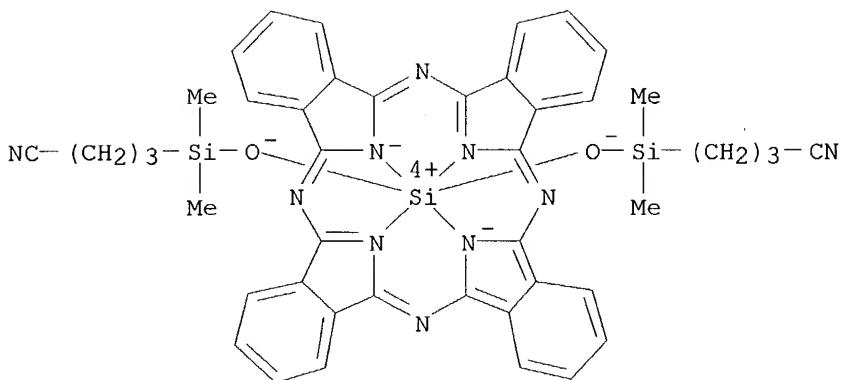
PAGE 1-A



PAGE 2-A

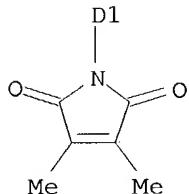
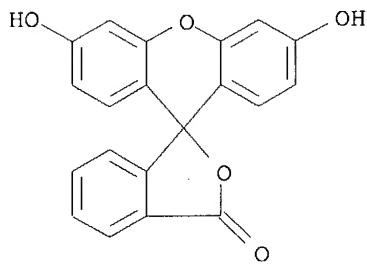


RN 163969-08-2 HCA  
 CN Silicon, bis[4-[ (hydroxy- $\kappa$ O) dimethylsilyl]butanenitrilato] [29H,31H-  
 phthalocyaninato(2-) - $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]  
 (OC-6-12)- (9CI) (CA INDEX NAME)



RN 171205-26-8 HCA

CN 1H-Pyrrole-2,5-dione, 1-[3',6'-dihydroxy-3-oxospiro[isobenzofuran-1(3H),9'-[9H]xanthen]-5(or 6)-yl]-3,4-dimethyl- (9CI) (CA INDEX NAME)



IC ICM G01N033-546

ICS C09B047-04

CC 9-5 (Biochemical Methods)

Section cross-reference(s): 15, 41, 74, 80

ST fluorescence energy transfer biochem analysis immunoassay; intramol energy transfer biochem analysis; latex fluorescent particle biochem analysis; biopolymer detection energy transfer particle; dye fluorescent particle biochem analysis; phthalocyanine deriv biochem analysis; naphthalocyanine deriv biochem analysis

IT 514-73-8 519-62-0, Chlorophyll b **2321-07-5** 3071-70-3

14806-50-9 16595-48-5 17094-16-5 23481-50-7 24796-94-9, Oxazine 1

perchlorate 30753-88-9 53213-94-8 53655-17-7 56089-72-6

70365-30-9 83484-76-8 86880-07-1 94052-41-2 97148-81-7

97807-64-2 116453-73-7 122711-10-8 150749-57-8 163968-80-7

163968-81-8 163968-82-9 163968-84-1 163968-85-2 163968-86-3

**163968-87-4** 163968-88-5 163968-89-6 163968-90-9

163968-91-0 163968-92-1 163968-93-2 163968-95-4 163969-13-9

163969-14-0 164106-16-5 171118-91-5 **171118-92-6D**, reaction with silicon phthalocyanine 171118-93-7 171118-99-3  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses) (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 56-65-5D, ATP, complex with fluorescein 68-26-8, all-trans-Retinol 75-78-5, Dichlorodimethylsilane 76-86-8, Triphenylchlorosilane 91-22-5, Quinoline, reactions 597-52-4, Triethylsilanol 1719-58-0, Chlorodimethylvinylsilane 1835-65-0, Tetrafluorophthalonitrile **2321-07-5D**, complex with ATP 3468-11-9, 1,3-Diiminoisoindoline 3634-67-1, Chlorotrihexylsilane 4655-61-2 6554-98-9, trans-4-Hydroxystilbene 7646-78-8, Tin tetrachloride, reactions 10026-04-7, Silicon tetrachloride 10038-98-9, Germanium tetrachloride 17196-12-2 18156-15-5 18419-53-9 19333-10-9 20082-71-7, Chlorodimethylpentafluorophenyldisilane 26857-61-4 32703-80-3, 4-tert-Butylphthalonitrile 37623-03-3 53749-38-5 74815-81-9 **92396-91-3** 102488-47-1 **105528-25-4** 116453-89-5 116453-91-9 117753-12-5 163968-99-8 163969-18-4 163969-19-5 163969-21-9  
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses) (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 19333-15-4P **92396-90-2P** 163969-16-2P 163969-17-3P 163969-24-2P  
 RL: ARG (Analytical reagent use); RCT (Reactant); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (fluorescence and intramol. energy transfer in particles for biochem. anal.)

IT 101-60-0P, Porphine 574-93-6DP, Phthalocyanine, derivs. 23178-68-9DP, salts **23627-89-6DP**, **Naphthalocyanine**, derivs. 37069-76-4DP, salts 47676-39-1DP, salts 47809-39-2DP, salts 52319-97-8P, 5-tert-Butyl-1,3-diiminoisoindoline 52754-39-9DP, salts 62054-48-2DP, salts 68812-20-4P 71481-78-2DP, salts 83683-61-8DP, salts **92396-89-9P** 127274-90-2DP, salts 143236-82-2DP, salts 163968-94-3P 163969-00-4P 163969-01-5P 163969-02-6DP, salts 163969-03-7DP, salts 163969-04-8DP, salts 163969-05-9DP, salts 163969-06-0DP, salts 163969-07-1P **163969-08-2P** 163969-09-3P 163969-10-6P 163969-11-7P 163969-15-1P 163969-20-8P 163969-22-0P 163969-23-1P 163969-25-3P 163969-26-4P 171118-94-8P **171205-26-8DP**, reaction with silicon phthalocyanine  
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses) (fluorescence and intramol. energy transfer in particles for biochem. anal.)

L113 ANSWER 11 OF 26 HCA COPYRIGHT 2004 ACS on STN

123:325780 Thermal recording materials providing durable black images. Matsumoto, Mansuke; Sasaki, Nobuaki; Sawano, Bunji; Hasegawa, Kyoharu; Yoshikawa, Kazuyoshi (Mitsui Toatsu Chemicals, Japan; Yamamoto Chemicals Inc). Jpn. Kokai Tokkyo Koho JP-07156555, A2 19950620 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-306283 19931207.

GI For diagram(s), see printed CA Issue.

AB The title materials, comprising a recording layer containing a carbonyl compound

having H atom in its  $\alpha$ -position and an imino compound I [X = aromatic or heterocyclic compound residue able to form a conjugated system with the C:NH; Y = O, NH, (OR)<sub>2</sub> (R = C1-4 alkyl, the 2 R's may form a ring); R1, R2

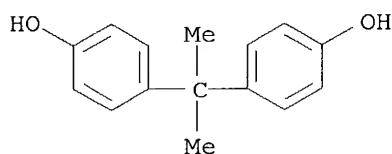
= halo, alkyl, alkoxy, aryloxy, alkylthio, arylthio, dialkylamino, amino, nitro, alkylsilyl, alkylsilyloxy, trifluoromethyl; p, q = 0-6, p + q = 0-6], contain a **fluoran** derivative II [ R3, R4 = C1-6 alkyl, cyclohexyl, (substituted) Ph, aralkyl, R3 and R4 may form a ring; R5 = H, C1-4 alkyl, halo; R6, R7 = H, halo, C1-4 alkyl] and a phenol derivative on a support. The materials show good heat response and provide high-color-quality black images with good storage stability. Thus, a composition containing 1,4-cyclohexanedione, 1,3-diimino-4,5,6,7-tetrachloroisooindoline, II (R3 = R4 = Bu, R5 = Me, R6 = R7 = H), and **bisphenol A** was coated on a paper support to give a thermal recording paper.

IT 80-05-7, **Bisphenol A**, uses 3468-11-9  
, 1,3-Diiminoisoindoline 89331-94-2

RL: DEV (Device component use); USES (Uses)  
(thermal recording materials giving stable black images)

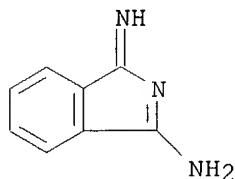
RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



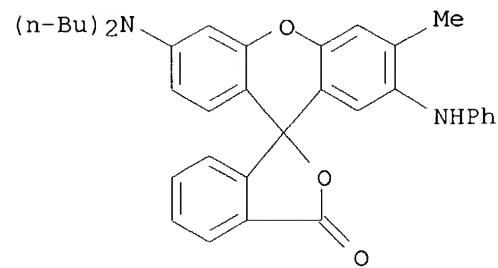
RN 3468-11-9 HCA

CN 1H-Isoindol-3-amine, 1-imino- (9CI) (CA INDEX NAME)



RN 89331-94-2 HCA

CN Spiro[isobenzofuran-1(3H),9!-[9H]xanthen]-3-one, 6'-(dibutylamino)-3'-methyl-2'-(phenylamino)- (9CI) (CA INDEX NAME)



IC ICM B41M005-30

ICS B41M005-26

CC 74-6 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Reprographic** Processes)

ST thermal recording material carbonyl compd; imino compd thermal recording material; **fluoran** deriv thermal recording material; phenol deriv thermal recording material

IT 80-05-7, **Bisphenol A**, uses 637-88-7,

1,4-Cyclohexanedione **3468-11-9**, 1,3-Diiminoisoindoline  
 5027-32-7, 1,1,2,2-Tetraacetylethane **40360-28-9**, 1,3-Diimino-4,5,6,7-tetrachloroisoindoline **89331-94-2**

RL: DEV (Device component use); USES (Uses)  
 (thermal recording materials giving stable black images)

L113 ANSWER 12 OF 26 HCA COPYRIGHT 2004 ACS on STN

115:82180 Color electrophotographic toner containing negatively chargeable polyester binder. Kanbayashi, Makoto; Okado, Kenji; Nagatsuka, Takayuki (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho **JP 02264265**; A2 19901029 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-84115 19890404.

AB In the title toner made by pulverization process including mixing an elec. insulative resin comprising a neg. chargeable polyester having a volume average particle diameter 30-1000  $\mu\text{m}$  and a pos. chargeable pigment or dye having an elec. charge 3-45  $\mu\text{C/g}$  and a primary particle diameter 0.05-5  $\mu\text{m}$  and heating and kneading the resultant mixture with a continuous extruding machine such as an extruder, the granularity distribution of the toner shows that the volume average particle diameter is 6-10  $\mu\text{m}$ , there is 15-40 number% of the toner particles having a particle diameter <5  $\mu\text{m}$ , the toner particles having a particle diameter 12.7-16  $\mu\text{m}$  occupy 0.1-5 volume%, and the coarse particles of the toner having a diameter >16  $\mu\text{m}$  occupy <10 volume% and the apparent viscosities of the toner at 100° and 90° are 104-5 + 105 and 5 + 104-106 P, resp.

IT **509-34-2**, C.I. Solvent Red 49 **574-93-6**,

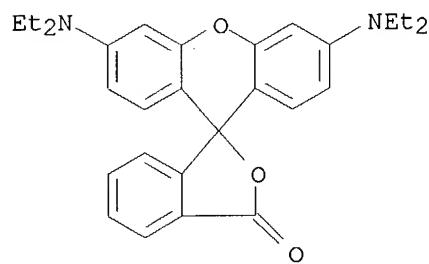
**Phthalocyanine**

RL: USES (Uses)

(color electrophotog. toners containing)

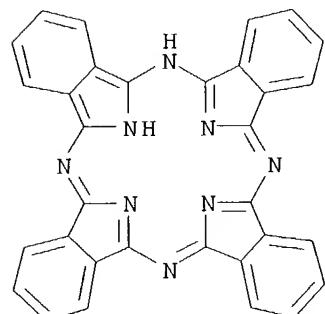
RN **509-34-2** HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-(9CI) (CA INDEX NAME)

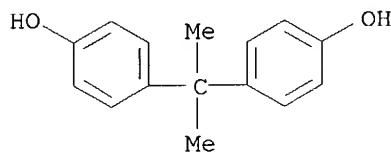


RN **574-93-6** HCA

CN 29H-**Phthalocyanine** (9CI) (CA INDEX NAME)



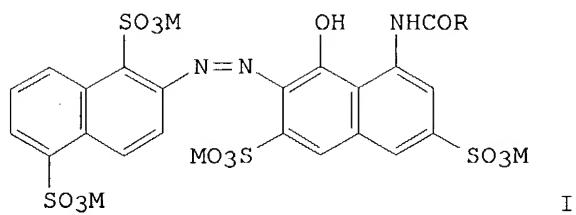
IT 80-05-7D, compds. with propylene oxide, polymers with fumaric acid  
 RL: USES (Uses)  
 (neg. chargeable binders, color electrophotog. toners containing)  
 RN 80-05-7 HCA  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



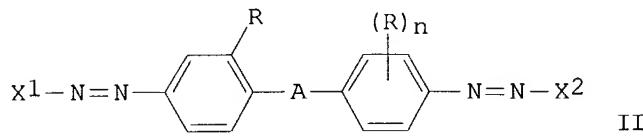
IC ICM G03G009-087  
 ICS G03G009-09  
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and  
 Other **Reprographic** Processes)  
 IT Polyesters, uses and miscellaneous  
 RL: USES (Uses)  
 (bisphenol A-based, propylene oxide-modified,  
 binders, color electrophotog. toners containing)  
 IT 81-39-0, C.I. Solvent Red 52 **509-34-2**, C.I. Solvent Red 49  
**574-93-6, Phthalocyanine** 4531-49-1, C.I. Pigment  
 Yellow 17  
 RL: USES (Uses)  
 (color electrophotog. toners containing)  
 IT 80-05-7D, compds. with propylene oxide, polymers with fumaric acid  
 110-17-8D, 2-Butenedioic acid (E)-, polymers with propylene oxide-modified  
**bisphenol A**  
 RL: USES (Uses)  
 (neg. chargeable binders, color electrophotog. toners containing)

L113 ANSWER 13 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 111:136203 Forming ink-jet color images. Takimoto, Hiroshi; Yoneyama, Tomio;  
 Sano, Hideo; Haruta, Masahiro; Suga, Yuko; Shirota, Katsuhiro (Mitsubishi  
 Kasei Corp., Japan; Canon K. K.). Jpn. Kokai Tokkyo Koho JP 63306075-A2  
 19881214 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1987-141389 19870608.

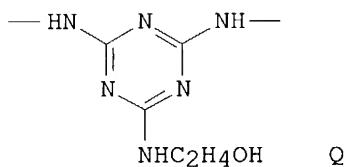
GI



I



II



Q

AB High-quality ink-jet color images are formed by ink-jet printer on various grades of paper without printer nozzle clogging and with good ink storability, by using magenta inks containing dyes I (R = alkyl, ph; M = alkali metal, NH4, organic amine), yellow inks containing dyes II (A = NHCONH,

Q;

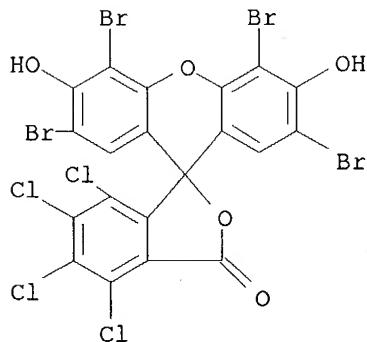
X1,X2 = Ph, naphthyl, optionally substituted by SO3M or CO2M; R = Me, MeO; n = 0.1; M as above), and cyan inks containing dyes WPc(SO3M)m(SO2NH2)n (W = Cu, Ni; P = phthalocyanine; M as above; m = 2-4; n=0-3). A typical magenta ink comprised I (M = Na; k = Ph) 7, water 70, diethylene glycol 25, and glycerin 3 parts.

IT 18472-87-2, C.I. Acid Red 92 67968-25-6

RL: USES (Uses)  
(dye, for inks for ink-jet printing)

RN 18472-87-2 HCA

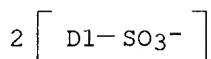
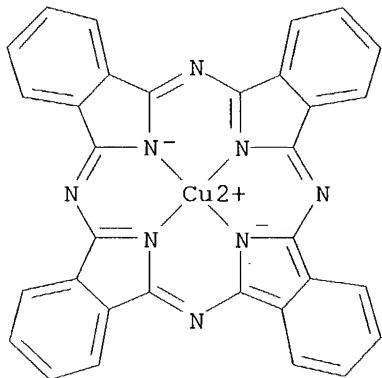
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



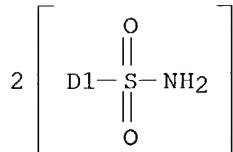
●2 Na

RN 67968-25-6 HCA  
 CN Cuprate(2-), [C,C-bis(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(4-)–κN29,κN30,κN31,κN32]–, disodium  
 (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

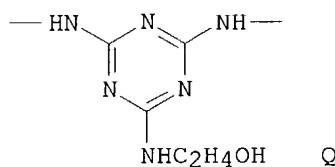
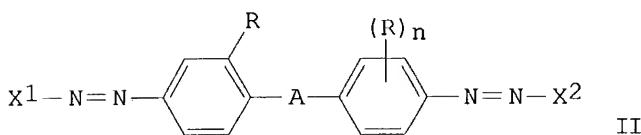
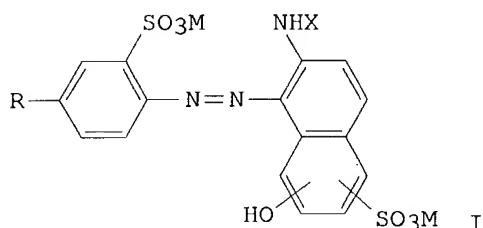


IC ICM B41M005-00  
 ICS C09B067-22; C09D011-00; C09D011-02  
 CC 42-12 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): **41, 74**  
 IT 1064-48-8, C.I. Acid Black 1 1934-21-0, C.I. Acid Yellow 23 2650-18-2,  
 C.I. Acid Blue 9 12221-89-5, C.I. Direct Black 62 **18472-87-2**,  
 C.I. Acid Red 92 **67968-25-6** 70968-24-0 107246-80-0  
 109205-04-1 110292-36-9 112224-50-7 112224-51-8 122856-51-3  
 122856-52-4  
 RL: USES (Uses)  
 (dye, for inks for ink-jet printing)

L113 ANSWER 14 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 111:136202 Forming ink-jet color images. Takimoto, Hiroshi; Yoneyama, Tomio;

Sano, Hideo; Haruta, Masahiro; Suga, Yuko; Shirota, Katsuhiro (Mitsubishi Kasei Corp., Japan; Canon K. K.). Jpn. Kokai Tokkyo Koho JP-63306076A2 19881214 Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-141390 19870608.

GI



AB High-quality ink-jet color images are formed by ink-jet printer on various grades of paper without printer nozzle clogging and with good ink storability, by using magenta inks containing dyes I (R = nitro, acylamino; X = H, alkyl; M = alkali metal, NH4, organic amine), yellow inks containing dyes

II

(A = NHCONH, Q; X1, X2 = Ph or naphthyl optionally substituted by SO3M or CO2M; R = Me, MeO; 1 = 0.1; M as above), and cyan inks containing dyes WPc(SO3M)m(SO2NH2)n (W = Cu, Ni, Pc = phthalocyanine; M as above; n = 2-4; n = 0-3). A typical magenta ink composed I (R = NO2; X = H; M = K) 2, water 70, diethylene glycol 25, and glycerin 3 parts.

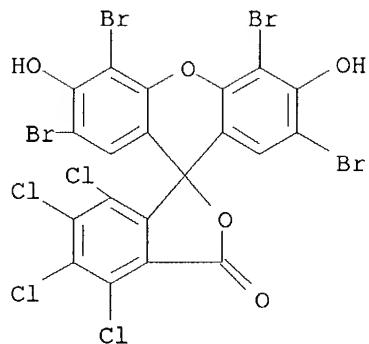
IT **18472-87-2**, C.I. Acid Red 92 **67968-25-6**

RL: USES (Uses)

(dye, for inks for ink-jet printing)

RN 18472-87-2 HCA

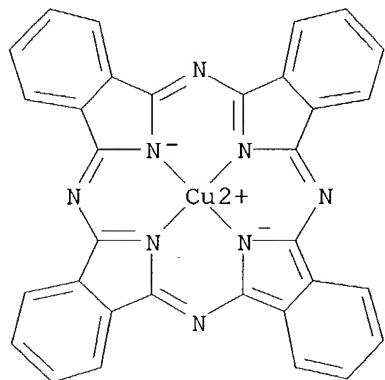
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

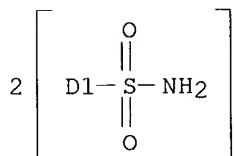
RN 67968-25-6 HCA  
 CN Cuprate(2-), [C,C-bis(aminosulfonyl)-29H,31H-phthalocyanine-C,C-disulfonato(4-)-κN29,κN30,κN31,κN32]-, disodium  
 (9CI) (CA INDEX NAME)

PAGE 1-A



$$2 \left[ \text{D1-} \text{SO}_3^- \right]$$

PAGE 2-A

● 2 Na<sup>+</sup>

IC ICM B41M005-00  
 ICS C09B067-22; C09D011-00; C09D011-02  
 CC 42-12 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 41, 74  
 IT 1064-48-8, C.I. Acid Black 1 1934-21-0, C.I. Acid Yellow 23 2650-18-2,  
 C.I. Acid Blue 9 12221-89-5, C.I. Direct Black 62 18472-87-2,  
 C.I. Acid Red 92 67968-25-6 70968-24-0 107246-80-0  
 110292-36-9 112224-50-7 112224-51-8 122856-53-5 122856-54-6  
 RL: USES (Uses)  
 (dye, for inks for ink-jet printing)

L113 ANSWER 15 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 110:182893 Yellow, magenta, cyan, and black toners for color  
 electrophotographic developers. Kobayashi, Hiroyuki; Uchida, Mitsuru;  
 Okado, Kenji (Canon K. K., Japan). Eur. Pat. Appl. EP-275636-A2 19880727,  
 38 pp. DESIGNATED STATES: R: DE, FR, GB, IT, NL. (English). CODEN:  
 EPXXDW. APPLICATION: EP 1987-310178 19871118. PRIORITY: JP 1987-9467  
 19870119.

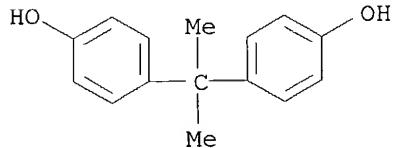
AB Yellow, magenta, cyan, and black toners, each comprising appropriate  
 pigments, a binder resin selected from polyesters and acrylate-styrene  
 copolymers, and a fluidity-improving agent selected from silica, ZnO,  
 metal stearates, polytetrafluoroethylene, and vinylidene fluoride resins,  
 are prepared and combined with ferrite carriers coated with a mixture of a  
 styrene-type resin and a F-containing resin to give color electrophotog.  
 developers. Each of the color toners is strictly regulated in relation  
 not only to the carrier but also to the other color toners. More  
 specifically, each color toner is strictly controlled with respect to  
 particle size distribution, freeness from agglomeration, melting  
 characteristics, chromaticity, triboelec. chargeability, and optical  
 properties. The color toners thus prepared exhibit excellent performances  
 at every stage of color electrophotog. process including development,  
 transfer, and fixing.

IT 80-05-7D, propoxides, condensation products with fumaric acid  
 RL: USES (Uses)

(binders, for toners for color electrophotog. developers)

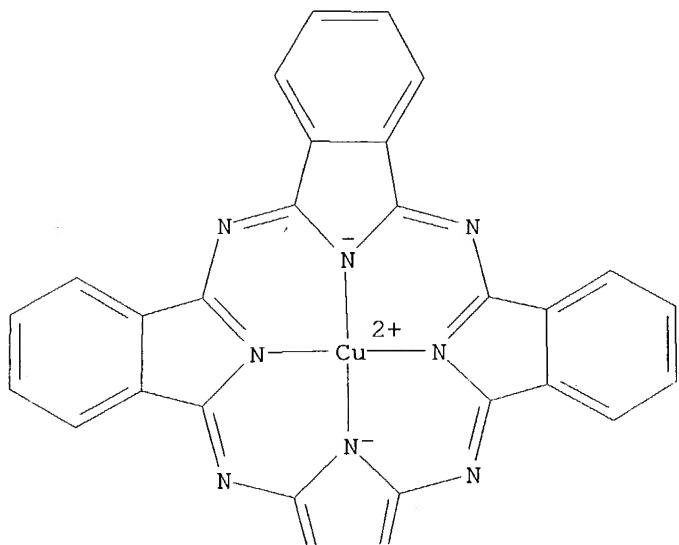
RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)

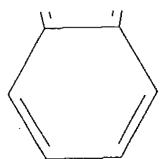


IT 147-14-8 574-93-6, 29H,31H-**Phthalocyanine**  
 116107-50-7  
 RL: USES (Uses)  
 (cyan toners containing, for color electrophotog. developers)  
 RN 147-14-8 HCA  
 CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka  
 ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

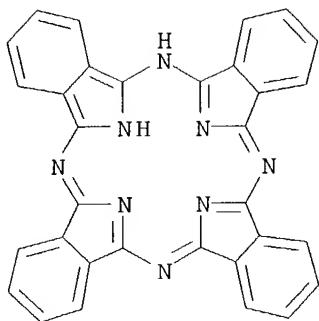
PAGE 1-A



PAGE 2-A



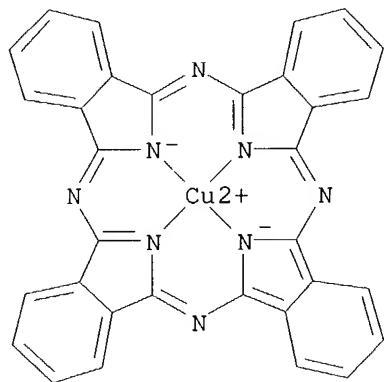
RN 574-93-6 HCA  
 CN 29H,31H-Phthalocyanine (9CI) (CA INDEX NAME)



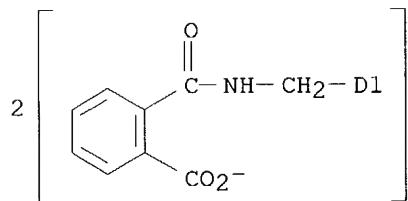
RN 116107-50-7 HCA

CN Cuprate(2-), [[2,2'-[29H,31H-phthalocyanine-C,C-diylbis(methyleneiminocarbonyl)]bis[benzoato]](4-)N29,N30,N31,N32]-, barium (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

● Ba<sup>2+</sup>

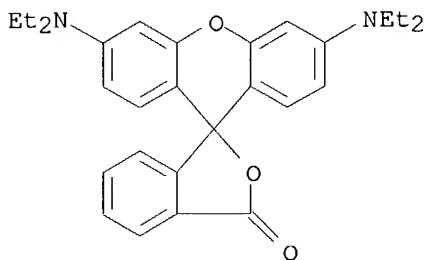
IT 509-34-2

RL: USES (Uses)

(magenta toners containing, for color electrophotog. developers)

RN 509-34-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-  
(9CI) (CA INDEX NAME)



IC ICM G03G009-08  
ICS G03G013-01

CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and  
Other **Rephotographic** Processes)

IT 80-05-7D, propoxides, condensation products with fumaric acid  
110-17-8D, Fumaric acid, condensation products with propoxides of  
bisphenol

RL: USES (Uses)  
(binders, for toners for color electrophotog. developers)

IT 147-14-8 574-93-6, 29H,31H-**Phthalocyanine**

116107-50-7

RL: USES (Uses)  
(cyan toners containing, for color electrophotog. developers)

IT 81-39-0 509-34-2 2425-85-6 6041-94-7 6320-14-5 6410-13-5  
6410-41-9 6471-51-8 119466-10-3, C.I. Disperse Violet 32

RL: USES (Uses)  
(magenta toners containing, for color electrophotog. developers)

L113 ANSWER 16 OF 26 HCA COPYRIGHT 2004 ACS on STN

109:83637 Two-color thermal recording materials containing a coloring pigment.  
Inaba, Norihiko; Yuyama, Yukihiko; Okuda, Hiroaki; Kato, Noritomo (Ricoh  
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62299383 A2 19871226 Showa,  
8 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-143945 19860619.

AB Two-color thermal recording materials are prepared by laminating  
successively a high temperature-coloration layer containing a coloring  
pigment, a  
decoloring layer, and a low temperature-coloration layer on a support. The  
materials provide high quality 2 colors images with good color separation and  
without fog. Thus, a paper support was 1st coated with a composition  
containing

3-diethylamino-7-chlorofluoran, Bisphenol A,  
CaCO<sub>3</sub>, and **phthalocyanine** blue (I), then coated with a composition  
containing 4,4-dithiodimorpholine, and finally coated with a composition  
containing

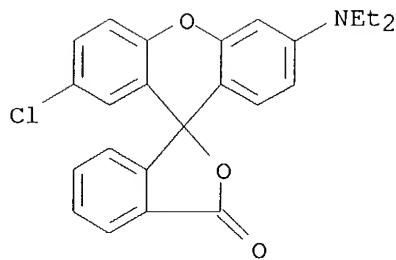
3-(N-ethyl-N-aminolamino)-6-methyl-7-anilinofluoran,  
3,3'-dichlorophenylthiourea, and CaCO<sub>3</sub> to give a thermal recording paper.  
The recording paper was recorded by using a thermal head at a thermal  
energy of 1.0 and 2.0 mJ/dot to give high quality black images and red  
images, resp., compared to a control containing no I.

IT 26567-23-7 70516-37-9

RL: USES (Uses)  
(dye, two-color thermal printing material using)

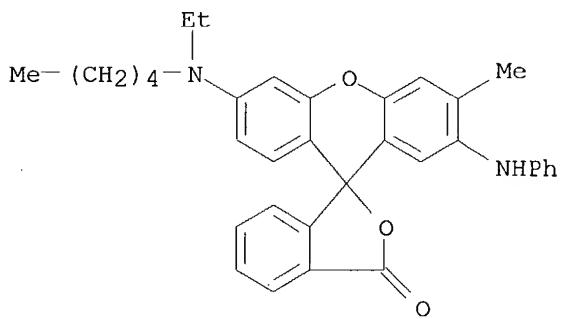
RN 26567-23-7 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2'-chloro-6'-  
(diethylamino)- (9CI) (CA INDEX NAME)



RN 70516-37-9 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 6'-(ethylpentylamino)-3'-methyl-2'-(phenylamino)- (9CI) (CA INDEX NAME)



IT 147-14-8, Phthalocyanine blue

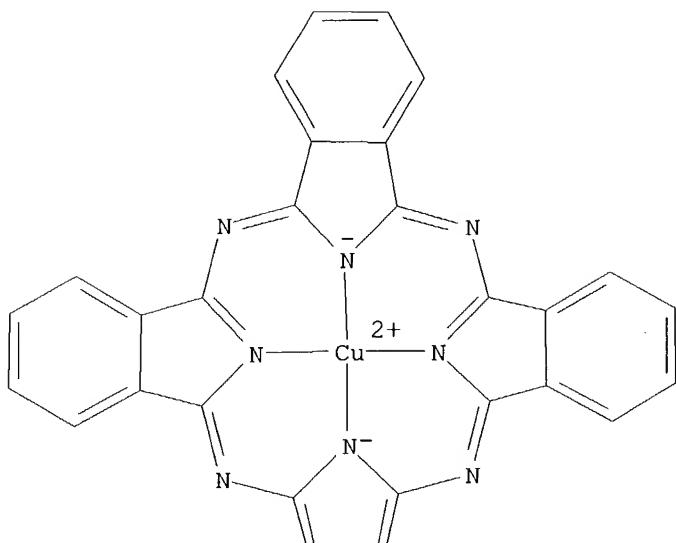
RL: USES (Uses)

(pigment, two-color thermal printing material high temperature-coloration layer containing)

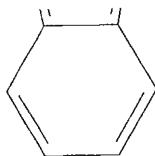
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM B41M005-18  
 ICS B41M005-18  
 CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and  
 Other **Reprographic** Processes)  
 IT 26567-23-7 70516-37-9  
 RL: USES (Uses)  
 (dye, two-color thermal printing material using)  
 IT 147-14-8, **Phthalocyanine** blue  
 RL: USES (Uses)  
 (pigment, two-color thermal printing material high temperature-coloration  
 layer containing)

L113 ANSWER 17 OF 26 HCA COPYRIGHT 2004 ACS on STN

107:97632 Scale-preventing coatings for vinyl chloride polymer manufacture.

Koyanagi, Shunichi; Kitamura, Hajime; Shimizu, Toshihide; Kaneko, Ichiro  
 (Shin-Etsu Chemical Co., Ltd., Japan). Eur. Pat. Appl. EP-172427-A2  
 19860226, 153 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE.  
 (English). CODEN: EPXXDW. APPLICATION: EP 1985-109161 19850722.

PRIORITY: JP 1984-152522 19840723; JP 1984-155967 19840726.

AB PVC or vinyl chloride copolymer is prepared without polymer deposition and

scaling on the polymerization reactor walls by applying an antiscalining coating, comprising  $\geq 1$  dye, pigment, aromatic or heterocyclic compound having  $\geq 5$  conjugated  $\pi$  bonds, to the walls of the polymerization reactor and controlling the  $\text{Cl}^-$  concentration in the reaction mixture to  $\leq 100$  ppm. Thus, a coating containing 0.5% Basic Black 8 and  $\text{H}_2\text{O}$  was coated onto the polished inner wall surface of a 1000-L polymerization reactor, dried at  $80^\circ$  for 10 min, and thoroughly washed with  $\text{H}_2\text{O}$ . The coated reactor was charged with 200 kg  $\text{H}_2\text{C:CHCl}$ , 400 kg  $\text{H}_2\text{O}$ , partially saponified Poval 44, hydroxypropyl methyl cellulose 36, and tert-butylperoxyneodecanoate 60 g. Polymerization was carried out at  $52^\circ$  for 7 h, and the  $\text{Cl}^-$  concentration was maintained at 13-18 ppm by changing the contents of the  $\text{MeCl}$  and  $\text{HCl}$  components contained in the starting monomer. At the end of polymerization,

the

polymer was taken out and the reactor washed internally with  $\text{H}_2\text{O}$  at flow rate 0.1  $\text{m}^3/\text{m}^2\text{-h}$  for 10 min. Inspection of the wall surfaces after washing demonstrated no adhering of PVC scales, vs. thick adhering of scales over the entire polymerization reactor inner wall surface (1000  $\text{g/m}^2$ )

for

a control polymerization conducted without an antiscalining coating, and with  $\text{Cl}^-$  concentration during polymerization 280-350 ppm.

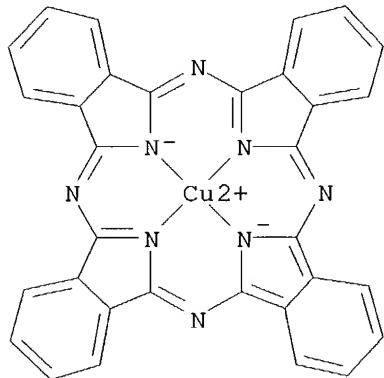
IT 1330-37-6, Pigment Green 37 17372-87-1, Acid Red 87

RL: USES (Uses)

(polymerization reactor wall antiscalining coatings containing, for PVC manufacturer)

RN 1330-37-6 HCA

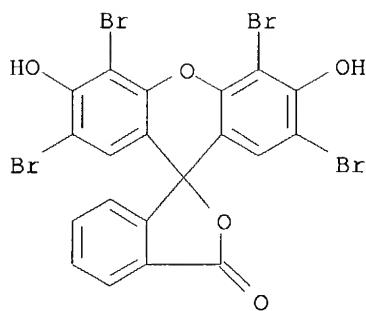
CN Copper, [C,C,C,C,C,C,C-octachloro-29H,31H-phthalocyaninato(2-)- $\kappa$ N29, $\kappa$ N30, $\kappa$ N31, $\kappa$ N32]- (9CI) (CA INDEX NAME)



8 ( D1-C1 )

RN 17372-87-1 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',4',5',7'-tetrabromo-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

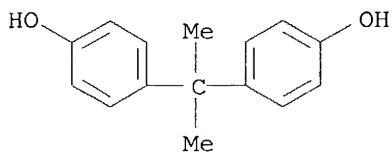
IT 80-05-7, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization reactor wall antiscalting coatings containing, for PVC manufacture)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethyldene)bis- (9CI) (CA INDEX NAME)



IT 147-14-8, Pigment Blue 15 509-34-2, Solvent Red 49

574-93-6, Phthalocyanine 1330-38-7, Direct

Blue 86 14302-13-7 16423-68-0, Food Red 14

RL: DEV (Device component use); USES (Uses)

(scale-preventing coatings containing, for polymerization reactor walls in

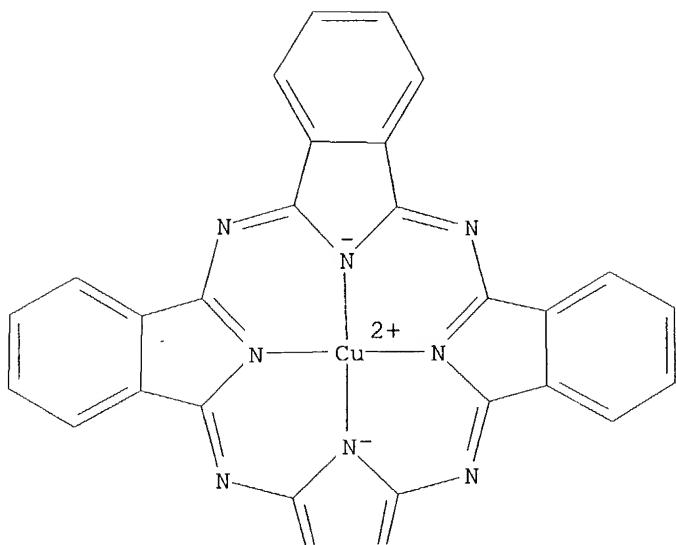
PVC

manufacture)

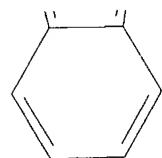
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

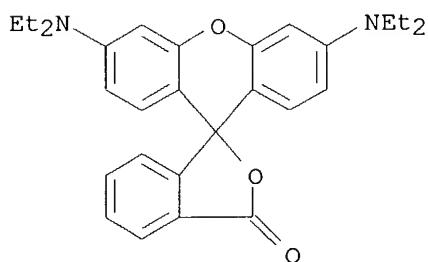
PAGE 1-A



PAGE 2-A

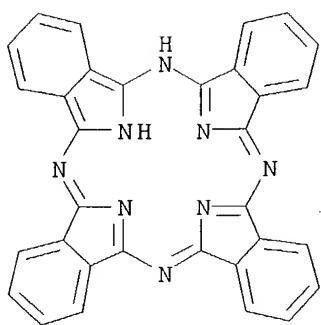


RN 509-34-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(diethylamino)-  
(9CI) (CA INDEX NAME)

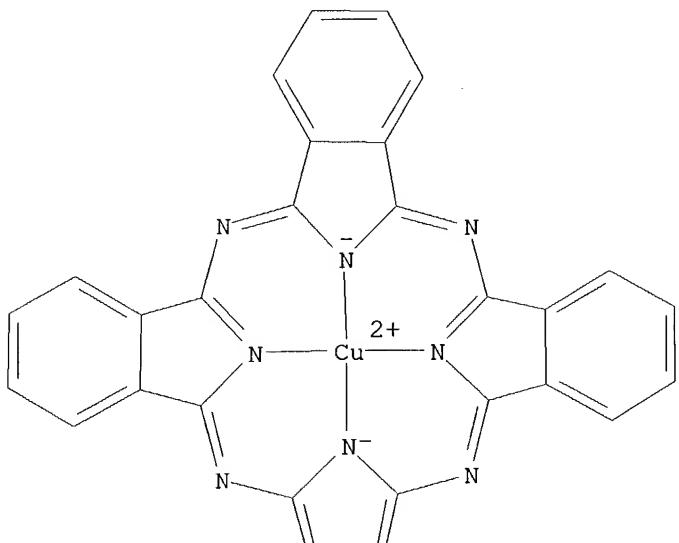
RN 574-93-6 HCA

CN 29H,31H-Phthalocyanine (9CI) (CA INDEX NAME)

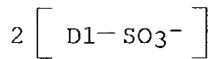
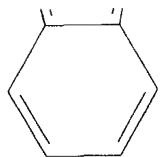


RN 1330-38-7 HCA  
CN Cuprate(2-), [29H,31H-phthalocyanine-C,C-disulfonato(4-) -  
κN29,κN30,κN31,κN32]-, disodium (9CI) (CA INDEX  
NAME)

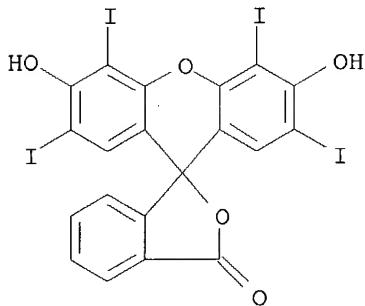
PAGE 1-A



PAGE 2-A

●2 Na<sup>+</sup>

RN 14302-13-7 HCA  
 CN C.I. Pigment Green 36 (9CI) (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 RN 16423-68-0 HCA  
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-  
 2',4',5',7'-tetraido-, disodium salt (9CI) (CA INDEX NAME)



●2 Na

IC ICM C08F014-06  
 ICS C08F002-00  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 35, 41, 42  
 IT 66-71-7, 1,10-Phenanthroline 91-22-5, Quinoline, uses and miscellaneous  
 92-83-1, Xanthene 101-54-2, 4-Aminodiphenylamine 198-55-0, Perylene  
 225-61-6 260-94-6 304-81-4 447-53-0, 1,2-Dihydronaphthalene  
 477-73-6 482-89-3D, reduced 534-85-0, 2-Aminodiphenylamine 557-34-6,  
 Zinc(II) acetate 578-95-0, Acridone 632-99-5, Rosaniline 655-86-7  
 796-30-5, 1,4-Diphenylnaphthalene 883-93-2, 2-Phenylbenzothiazole  
 947-63-7 1314-62-1, Vanadium pentoxide, uses and miscellaneous  
 1325-85-5, Solvent Blue 2 1327-70-4, Solubilized Sulfur Blue 15  
 1327-84-0, Sulfur Red 3 1330-37-6, Pigment Green 37 1343-98-2  
 2010-06-2, 2-Amino-4-phenylthiazole 2050-14-8 2050-37-5 2379-75-1,  
 Vat Violet 3 2465-27-2, Basic Yellow 2 2611-80-5, Acid Red 82  
 2876-17-7 2876-23-5 4395-53-3, Vat Black 25 4677-04-7 4787-93-3,

Acid Red 8 5462-29-3, Vat Violet 2 6371-38-6, Vat Blue 41 6378-88-7,  
 Acid Blue 59 6826-24-0 7446-70-0, Aluminum trichloride, uses and  
 miscellaneous 7646-79-9, uses and miscellaneous 8005-02-5, Solvent  
 Black 7 10127-03-4, Pigment Blue 25 10134-35-7, Solubilized Vat Black  
 1 10193-36-9, Orthosilicic acid 10343-58-5, Acid Yellow 99  
 10354-00-4 12217-43-5, Basic Blue 47 12217-44-6, Basic Blue 64  
 12219-87-3, Acid Green 40 12223-34-6, Disperse Red 12 12224-98-5,  
 Pigment Red 81 12226-72-1, Solvent Black 23 12768-78-4, Acid Green 16  
 12768-80-8, Basic Blue 40 13472-30-5 14233-37-5, Solvent Blue 36  
 17354-14-2, Solvent Blue 35 **17372-87-1**, Acid Red 87  
 17534-14-4, 9-Mercaptoanthracene 19286-75-0, Disperse Violet 30  
 26093-31-2 27938-76-7 29909-72-6 33270-70-1, Solvent Red 8  
 35079-24-4, 2-Iodo-1,4-naphthoquinone 36043-49-9 40019-43-0  
 53348-04-2, 9,10-Diaminophenanthrene 55840-82-9, Basic Blue 3  
 59459-48-2, Solvent Orange 40 61724-94-5, Direct Red 9 61725-34-6,  
 Mordant Green 29 63464-85-7 78769-83-2 103863-34-9 109850-57-9  
 109871-16-1 109871-25-2, 4-Nitroso-1-naphthylamine 109944-90-3  
 RL: USES (Uses)  
 (polymerization reactor wall antiscalting coatings containing, for PVC  
 manufacture)

IT **80-05-7**, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization reactor wall antiscalting coatings containing, for PVC  
 manufacture)

IT 61-73-4, Basic Blue 9 65-61-2, Basic Orange 14 66-76-2, Dicoumarol  
 71-48-7, Cobalt(II) acetate 72-48-0, Alizarine 81-53-8 83-08-9,  
 Quinophthalone 90-11-9, 1-Bromonaphthalene 90-14-2 90-15-3,  
 $\alpha$ -Naphthol 92-62-6, 3,6-Diaminoacridine 92-84-2, Phenothiazine  
 93-04-9, 2-Methoxynaphthalene 101-60-0 117-99-7 130-20-1, Vat Blue 6  
 131-91-9,  $\alpha$ -Nitroso- $\beta$ -naphthol **147-14-8**, Pigment Blue  
 15 204-02-4, Perimidine 225-74-1 229-87-8, 3,4-Benzoquinoline  
 275-51-4 477-73-6 487-19-4 493-77-6, 2,4,6-Triphenyl-S-triazine  
**509-34-2**, Solvent Red 49 519-61-9 519-62-0, Chlorophyll B  
 522-97-4, Tetrahydroberberine 532-82-1, Basic Orange 2 573-12-6,  
 Phenanthrene-1,2-quinone **574-93-6**, **Phthalocyanine**  
 577-85-5, Flavonol 578-06-3, 1-Aminoacridine 578-07-4, 4-Aminoacridine  
 581-28-2, 2-Aminoacridine 613-20-7, 2,6-Naphthoquinone 635-90-5,  
 1-Phenylpyrrole 642-31-9 643-62-9 670-95-1, 4-Phenylimidazole  
 809-63-2 825-55-8, 2-Phenylthiophene 846-70-8, Acid Yellow 1  
 860-22-0, Acid Blue 74 911-90-0 1096-84-0 1139-83-9 1167-72-2  
 1309-33-7, Ferric hydroxide 1313-13-9, Manganese dioxide, uses and  
 miscellaneous 1324-11-4, Vat Orange 1 1324-21-6, Mordant Black 13  
 1324-58-9, Direct Blue 108 1326-03-0, Pigment Violet 1 1326-38-1,  
 Solubilized Sulfur Brown 1 1327-10-2, Sulfur Brown 7 1327-56-6, Sulfur  
 Blue 9 1328-18-3, Vat Blue 19 **1330-38-7**, Direct Blue 86  
 1454-80-4, 2,2'-Diaminodiphenyl 1504-16-1, 3-Phenylindole 1532-84-9,  
 1-Aminoisouquinoline 1709-63-3 1806-29-7 1821-27-8,  
 4,4'-Dinitrodiphenylamine 1826-12-6, 4-Phenylthiazole 1836-22-2,  
 Mordant Red 9 1934-16-3, Basic Blue 24 2010-06-2, 2-Amino-4-  
 phenylthiazole 2052-25-7, Mordant Black 9 2148-14-3 2278-50-4, Vat  
 Black 8 2379-78-4, Vat Orange 15 2390-60-5, Basic Blue 7 2429-84-7,  
 Direct Red 1 2458-26-6, 5-Phenylpyrazole 2633-01-4, 3,3'-Azopyridine  
 2876-22-4 3426-43-5, Fluorescent brightening agent 90 3648-36-0, Basic  
 Red 13 4176-53-8, 1-Aminophenanthrene 4197-25-5, Solvent Black 3  
 4291-14-9, 2-Phenyl-1,3,4-thiadiazole 4443-99-6, Basic Black 2  
 4444-35-3 4458-37-1, 1,4-Diaminoanthracene 4464-75-9 4478-76-6, Acid  
 Red 80 4599-42-2 4735-10-8 4857-81-2, Acid Green 9 5422-17-3,  
 Direct Green 8 5487-14-9 5962-00-5 6245-87-0, Indoaniline  
 6272-40-8 6359-38-2, Benzoflavin 6359-82-6, Acid Yellow 11

6360-07-2, Acid Red 37 6371-11-5, Pigment Red 87 6378-88-7, Acid Blue  
 59 6406-61-7, Mordant Green 15 6428-56-4, Direct Black 74 6527-70-4  
 6655-84-1, Pigment Red 17 6655-95-4, Direct Blue 158 6813-44-1  
 6856-08-2, Acid Blue 102 7447-39-4, uses and miscellaneous 7576-65-0,  
 Disperse Yellow 54 7631-86-9, reactions 7646-85-7, uses and  
 miscellaneous 7699-41-4, Metasilicic acid 7718-54-9, uses and  
 miscellaneous 7758-94-3, Ferrous chloride 7786-30-3, Magnesium  
 dichloride, reactions 8003-22-3, Solvent Yellow 33 8004-59-9, Acid  
 Black 7 8004-92-0, Acid Yellow 3 8005-03-6, Acid Black 2 8005-30-9,  
 Vat Brown 22 8005-77-4, Basic Brown 1 9003-05-8, Polyacrylamide  
 9003-09-2, Polyvinylmethyl ether 9003-17-2, Polybutadiene 9003-27-4,  
 Polyisobutene 9003-53-6 9004-35-7, Cellulose acetate 9004-57-3,  
 Ethyl cellulose 9004-62-0, Hydroxyethyl cellulose 10143-03-0, Mordant  
 Violet 15 10241-21-1, Acid Green 12 10362-71-7, Indophenine  
 11098-99-0, Molybdenum oxide 11099-03-9, Solvent Black 5 11104-89-5,  
 Silicomolybdate acid 12027-38-2 12213-69-3, Pigment Green 2  
 12217-41-3 12217-98-0, Reactive Blue 8 12221-53-3, Basic Red 27  
 12221-56-6 12222-76-3 12223-73-3, Disperse Violet 10 12224-27-0  
 12225-33-1, Reactive Black 18 12226-94-7, Solvent Red 121 12227-42-8,  
 Vat Green 44 12234-56-9, Acid Black 159 12235-29-9 12235-80-2,  
 Direct Orange 57 12235-90-4, Disperse Black 29 12237-69-3, Solvent  
 Blue 73 12239-21-3 12627-14-4, Lithium silicate 12650-31-6, Hydron  
 Blue 12768-82-0, Basic Orange 15 **14302-13-7 16423-68-0**  
 , Food Red 14 18450-11-8, 2,4-Diaminophenazine 18624-44-7, Ferrous  
 hydroxide 20662-89-9, 4-Phenylloxazole 21645-51-2, Aluminum hydroxide  
 [Al(OH)3], reactions 22020-72-0 23579-46-6 24108-89-2, Pigment Red  
 123 24743-25-7 24979-93-9, Polyallene 24979-97-3,  
 Polytetrahydrofuran 25038-69-1 25067-59-8, Poly(N-vinyl carbazole)  
 25232-41-1, Poly(4-vinylpyridine) 25498-06-0 25568-84-7,  
 Polycyclopentadiene 25702-20-9 25951-24-0, Polysarcosine 26140-60-3,  
 Terphenyl 26386-86-7 26835-25-6 27393-85-7 27986-50-1,  
 Poly(1,3-cyclohexadiene) 28236-68-2, Phenylfuroxane 29588-56-5  
 29659-51-6, Poly(9-vinylanthracene) 30606-93-0 32146-09-1 32440-33-8  
 33090-29-8, 4,4'-Dibenzoyldiphenyl 33363-87-0, Direct Brown 25  
 34777-33-8 34938-47-1, 2-Phenylazoimidazole 38096-30-9,  
 Diaminonaphthalene 38183-03-8 39311-68-7, Stannic acid 40475-44-3,  
 Diaminobenzophenone 40498-13-3, Leucoquinizarin 41903-66-6  
 50525-58-1, Acid Violet 78 50814-26-1, Acid Blue 151 51039-49-7  
 53348-04-2, 9,10-Diaminophenanthrene 53802-03-2, Solvent Red 109  
 55513-24-1 55691-84-4, 2-Iodophenanthrene 55840-82-9, Basic Blue 3  
 56729-14-7, Butyl cellulose 58142-99-7, 5-Iodoisoquinoline 61723-90-8,  
 Acid Blue 60 61724-13-8, Acid Brown 161 61725-29-9, Mordant Blue 58  
 61725-74-4, Solvent Brown 37 61813-72-7, Azoic Black 1 62124-96-3  
 62882-10-4 64352-53-0 70210-47-8, Reactive Green 8 70234-95-6,  
 Poly(N-vinyl-1,2,4-triazole) 72154-46-2 73108-75-5 74343-76-3  
 80802-87-5 84954-93-8 85340-41-6, Solvent Yellow 61 95929-61-6  
 98590-06-8 102821-16-9, 2,4-Dinitro-9-phenylacridine 103859-52-5  
 104993-77-3, Tetraaminonaphthalene 109835-79-2 109850-54-6  
 109850-55-7 109850-56-8 109871-17-2 109871-18-3 109871-19-4  
 109871-20-7, 2-Anilinoanthracene 109871-21-8 109871-22-9  
 RL: DEV (Device component use); USES (Uses)  
 (scale-preventing coatings containing, for polymerization reactor walls in

PVC

manufacture)

L113 ANSWER 18 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 107:87255 Thermographic recording sheets. Igarashi, Akira (Fuji Photo Film  
 Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61130085, A2 19860617 Showa,  
 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-252354 19841129.

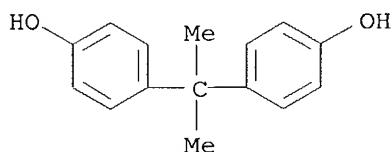
AB Colored thermog. recording sheets are obtained with dyes or pigments incorporated in the color development layer so that the absorbance maximum of the color development surface in the visible wavelength range is 0.2-1.0. The above color development layer is based on an electron donor colorless dye and an electron acceptor compound which reacts on heating to produce a colored material. The recording sheets show good printing d., shelf-life, contrast, and background chroma.

IT **80-05-7**, uses and miscellaneous

RL: USES (Uses)  
(color developer, thermog. recording sheet using)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)

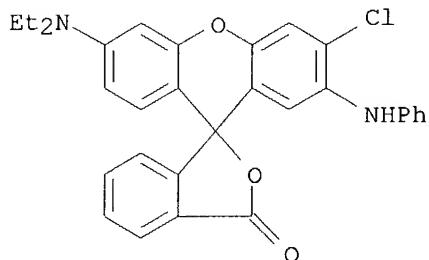


IT **85443-45-4**

RL: USES (Uses)  
(color former, thermog. recording sheet using)

RN 85443-45-4 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3'-chloro-6'-(diethylamino)-2'-(phenylamino)- (9CI) (CA INDEX NAME)



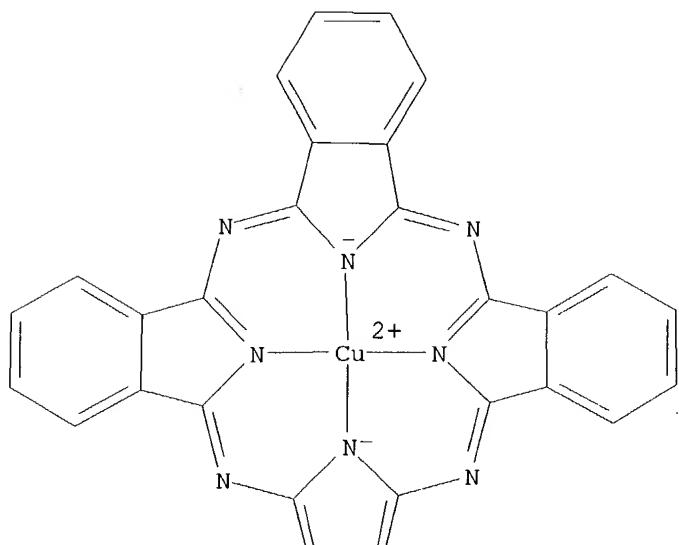
IT **147-14-8**, Copper phthalocyanine blue 2512-29-0  
, Hansa Yellow

RL: USES (Uses)  
(colored thermog. recording sheet containing,)

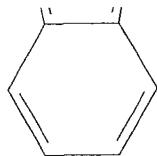
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

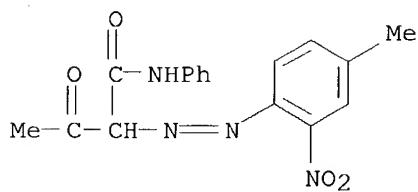
PAGE 1-A



PAGE 2-A



RN 2512-29-0 HCA

CN Butanamide, 2-[(4-methyl-2-nitrophenyl)azo]-3-oxo-N-phenyl- (9CI) (CA  
INDEX NAME)

IC ICM B41M005-18

CC 74-7 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

IT 80-05-7, uses and miscellaneous

RL: USES (Uses)  
(color developer, thermog. recording sheet using)

IT 85443-45-4

RL: USES (Uses)

(color former, thermog. recording sheet using)

IT 147-14-8, Copper **phthalocyanine** blue 548-62-9, Crystal  
violet 2512-29-0, Hansa Yellow 19381-50-1

RL: USES (Uses)

(colored thermog. recording sheet containing,)

L113 ANSWER 19 OF 26 HCA COPYRIGHT 2004 ACS on STN

103:96334 Color electrophotographic process. (Canon K. K., Japan). Jpn.

Tokkyo Koho JP 60015066 B4 19850417 Showa, 5 pp. (Japanese). CODEN:  
JAXXAD. APPLICATION: JP 1976-158717 19761227.AB A color electrophotog. process is claimed in which a part of the coloring agent in yellow and/or magenta toners is substituted with a color-former (or developer) of a 2-component coloration system, and the color-developer (or former) of the coloration system is added to toner image receptor surface layer. The method improves the reproducibility of the original colors. Thus, cyan toners containing maleic acid-styrene copolymer, polystyrene and **phthalocyanine** blue, magenta toners containing polyester, silicone resin and Brilliant Carmine 6B, and yellow toners containing polystyrene, silicone resin, Benzidine Yellow and leuco auramine were prepared, while a paper support was coated with a composition containing **Bisphenol A**, stearic acid, butadiene-styrene copolymer and an emulsifier to give a receptor sheet. The color electrophotog. process was carried out successively by imagewise exposure through red filter, development by cyan toners, exposure through green filter, magenta development, exposure through blue filter, yellow development, toner image transfer, and fixing. The reproduction of the original color was excellent.

IT 147-14-8

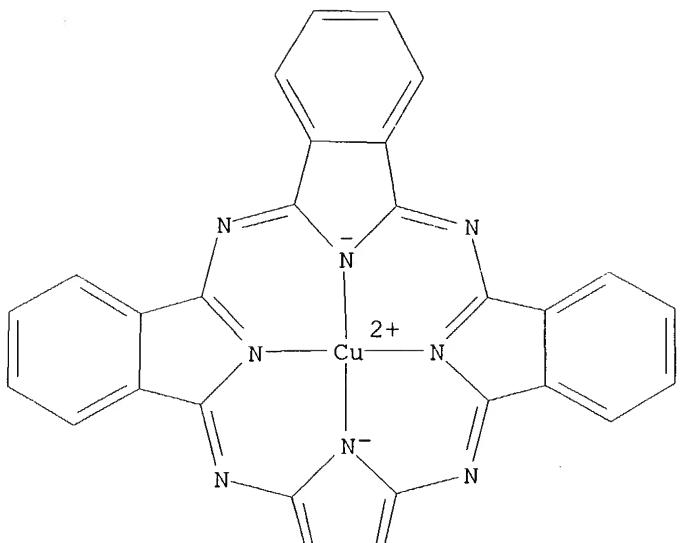
RL: USES (Uses)

(color electrophotog. toners containing)

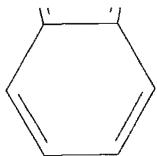
RN 147-14-8 HCA

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka  
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

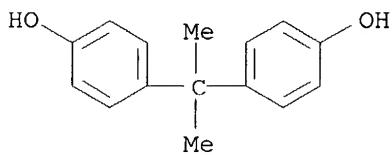


IT 80-05-7, uses and miscellaneous  
 RL: USES (Uses)

(color-developer, color electrophotog. toner image receptors containing)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethyldene)bis- (9CI) (CA INDEX NAME)



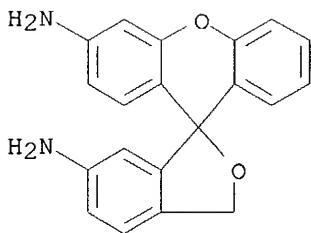
IT 50354-78-4

RL: USES (Uses)

(color-former, color electrophotog. toners containing)

RN 50354-78-4 HCA

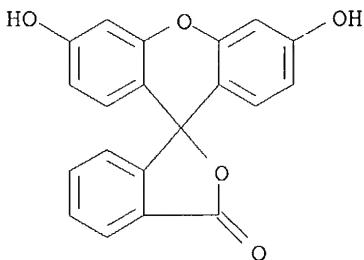
CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3',6-diamine (9CI) (CA INDEX NAME)



IC ICM G03G015-01  
 ICS G03G013-01  
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and  
 Other **Rephotographic** Processes)  
 IT 147-14-8 5281-04-9 6358-85-6 15518-68-0  
 RL: USES (Uses)  
 (color electrophotog. toners containing)  
 IT 80-05-7, uses and miscellaneous  
 RL: USES (Uses)  
 (color-developer, color electrophotog. toner image receptors containing)  
 IT 3375-25-5 50354-78-4  
 RL: USES (Uses)  
 (color-former, color electrophotog. toners containing)

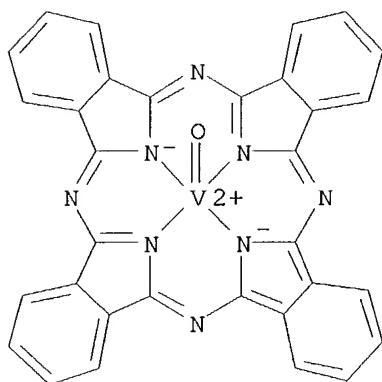
L113 ANSWER 20 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 102:141001 Laser multilayer recording materials. (Nippon Telegraph and  
 Telephone Public Corp., Japan). Jpn. Kokai Tokkyo Koho JP=59210543 A2  
 19841129 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1983-84249 19830516.

AB A multilayer laser recording material with improved sensitivity and  
 stability is obtained by forming on a substrate a multiset laminate  
 wherein each set is a sandwiched structure comprised of a light absorbing  
 middle layer which is the same for all sets and 2 transparent outer  
 layers. The above sandwiched multiset laminate may contain >2 different  
 light absorbing middle layers.  
 IT 2321-07-5  
 RL: USES (Uses)  
 (laser multiset sandwiched laminated recording materials containing)  
 RN 2321-07-5 HCA  
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
 (CA INDEX NAME)



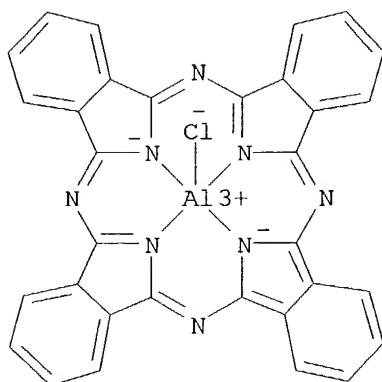
IT 13930-88-6 53199-37-4  
 RL: USES (Uses)  
 (laser multiset sandwiched laminated recording materials with  
 light-adsorbing layer of)  
 RN 13930-88-6 HCA  
 CN Vanadium, oxo[29H,31H-phthalocyaninato(2-)-κN29,κN30,κN3

1,κN32]-, (SP-5-12)- (9CI) (CA INDEX NAME)



RN 53199-37-4 HCA

CN Aluminum, chloro[C-chloro-29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,κN32]- (9CI) (CA INDEX NAME)



D1-C1

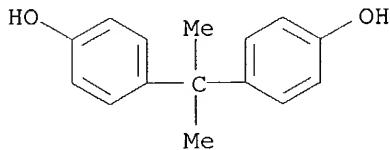
IT 80-05-7, uses and miscellaneous 87715-08-0

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with transparent layer of)

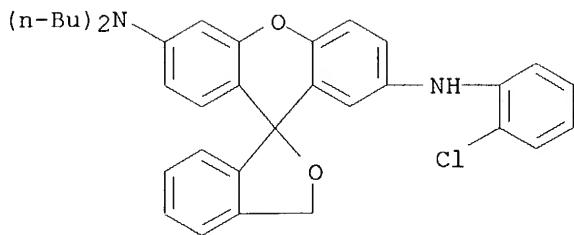
RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethyldene)bis- (9CI) (CA INDEX NAME)



RN 87715-08-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-2',6'-diamine, N6',N6'-dibutyl-N2'-(2-chlorophenyl)- (9CI) (CA INDEX NAME)



IC G11B007-24; B41M005-26; G11C013-04

CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and Other **Rephotographic** Processes)

IT 2321-07-5

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials containing)

IT 7440-22-4, uses and miscellaneous 7440-57-5, uses and miscellaneous  
7440-69-9, uses and miscellaneous 13494-80-9, uses and miscellaneous  
**13930-88-6 53199-37-4 89962-82-3 95570-07-3**

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with light-adsorbing layer of)

IT 77-09-8 **80-05-7**, uses and miscellaneous 124-26-5 125-20-2  
1314-35-8, uses and miscellaneous 1552-42-7 5339-80-0 7446-07-3  
7631-86-9, uses and miscellaneous 26628-47-7 **87715-08-0**

RL: USES (Uses)

(laser multiset sandwiched laminated recording materials with transparent layer of)

L113 ANSWER 21 OF 26 HCA COPYRIGHT 2004 ACS on STN

100:183285 Optical recording medium. Morinaka, Akira; Oikawa, Shigeru; Sato, Hirotugu (Nippon Telegraph and Telephone Public Corp., Japan). Ger.

Offen. DE-3319738-A1 19831201, 37 pp. (German). CODEN: GWXXBX.

APPLICATION: DE 1983-3319738 19830531. PRIORITY: JP 1982-92634 19820531; JP 1982-111549 19820630; JP 1982-153861 19820906.

AB A multilayer heat-sensitive optical recording structure with high light sensitivity which gives multicolored images of high resolution and contrast consists of a support which is transparent to visible light into the near-IR region, a color agent coating on the support containing leuco dyes, a light-absorbing layer for a sp. wavelength, on the dye layer, and a developer layer composed of a transparent solid acid. The layer structure may contain several color-agent coatings each associated with a light-absorbing layer with wavelength selected for the underlying leuco dye. Thus, a glass support was coated in a Ta boat under a pressure  $\leq 10^{-5}$  torr with Crystal Violet Lactone 2.0  $\mu$ , a light-absorbing layer, and phenolphthalein to give a plate which can be used to give blue images when contacted with a thermal printing head.

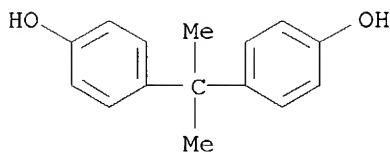
IT **80-05-7**, uses and miscellaneous

RL: USES (Uses)

(color optical recording material with color-developing layer containing, heat-sensitive)

RN 80-05-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT 26206-78-0 87715-08-0 89907-56-2

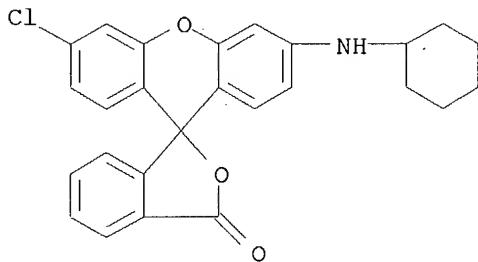
89946-81-6 89946-82-7

RL: USES (Uses)

(color optical recording materials with color-forming layer containing, heat-sensitive)

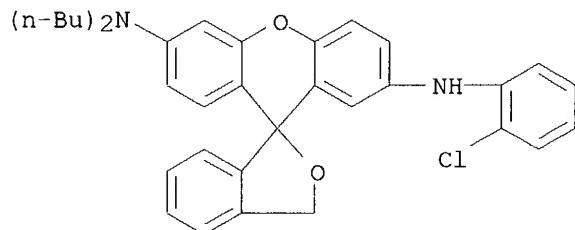
RN 26206-78-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3-one, 3'-chloro-6'-(cyclohexylamino)- (9CI) (CA INDEX NAME)



RN 87715-08-0 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-2',6'-diamine, N6',N6'-dibutyl-N2'-(2-chlorophenyl)- (9CI) (CA INDEX NAME)

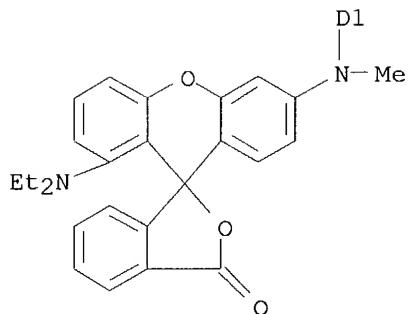


RN 89907-56-2 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthene]-3-one, 6'-(chlorophenyl)methylamino]-1'-(diethylamino)- (9CI) (CA INDEX NAME)

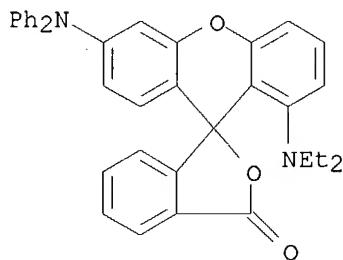


D1- Cl



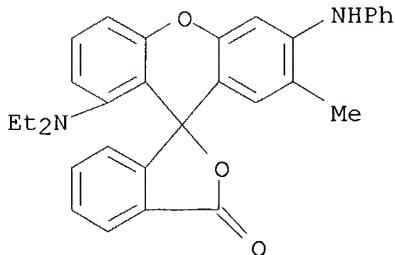
RN 89946-81-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 1'-(diethylamino)-6'-(diphenylamino)- (9CI) (CA INDEX NAME)



RN 89946-82-7 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 1'-(diethylamino)-7'-methyl-6'-(phenylamino)- (9CI) (CA INDEX NAME)



IT 147-14-8 2321-07-5 14376-21-7

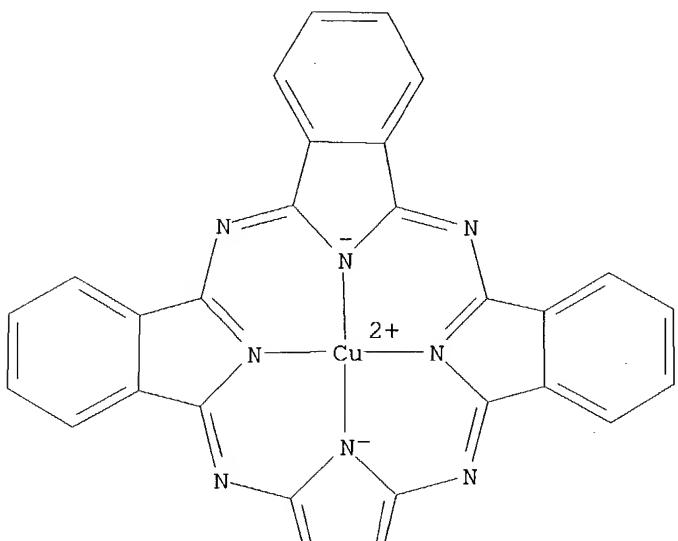
47822-79-7

RL: USES (Uses)

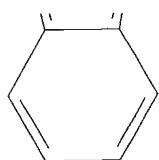
(color optical recording materials with light-absorbing layer containing, heat-sensitive)

RN 147-14-8 HCA  
 CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka  
 ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

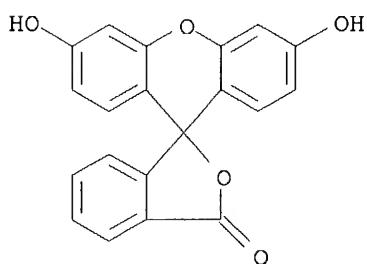
PAGE 1-A



PAGE 2-A



RN 2321-07-5 HCA  
 CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy- (9CI)  
 (CA INDEX NAME)



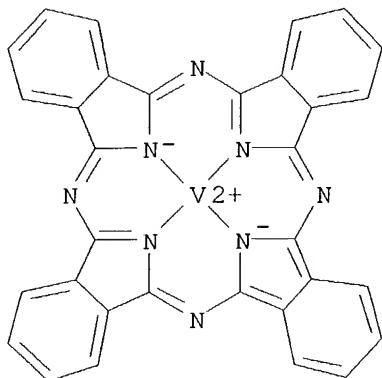
RN 14376-21-7 HCA

Les Henderson

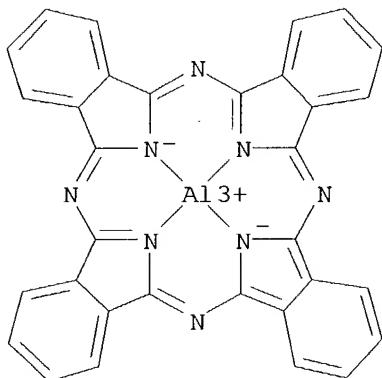
Page 79

571-272-2538

CN Vanadium, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31, .  
kappa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 47822-79-7 HCA  
CN Aluminum(1+), [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN  
31,κN32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IC B41M005-18; C23C013-04; C03C017-42  
CC 74-12 (Radiation Chemistry, Photochemistry, and **Photographic** and  
Other **Reprographic** Processes)  
IT 72-48-0 76-61-9 77-09-8 **80-05-7**, uses and miscellaneous  
117-39-5 125-20-2 480-16-0 603-45-2 1733-12-6 3225-30-7  
4430-25-5 32638-88-3  
RL: USES (Uses)  
(color optical recording material with color-developing layer containing,  
heat-sensitive)  
IT 102-06-7 124-26-5 1249-97-4 1552-42-7 5339-80-0 **26206-78-0**  
30378-58-6D, Ph derivs. **87715-08-0** **89907-56-2**  
**89946-81-6** **89946-82-7** 89963-96-2  
RL: USES (Uses)  
(color optical recording materials with color-forming layer containing,  
heat-sensitive)  
IT **147-14-8** **2321-07-5** 2768-89-0 6439-53-8  
**14376-21-7** 28984-20-5 **47822-79-7** 89918-26-3  
89918-29-6 89962-82-3 89962-83-4 97428-30-3  
RL: USES (Uses)  
(color optical recording materials with light-absorbing layer containing,

heat-sensitive)

L113 ANSWER 22 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 100:165388 Color electrophotography. (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57185447, A2 19821115 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-70506 19810511.

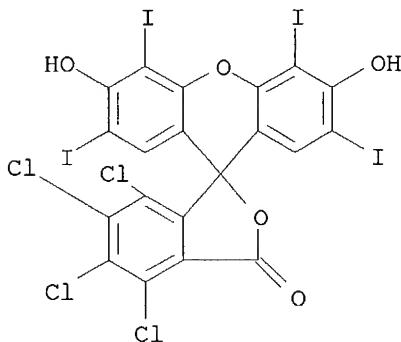
AB An electrophotog. plate is charged, patternwise (stripes or mosaic patterns) coated with colored but optically transparent particles having different color decomposition characteristics, imagewise exposed, and then developed to form colored images. The transparent particles may contain sublimable leuco dyes. Thus, red particles containing a melamine resin, methyl orange, and Aizen Rose Bengal B (C. I. Acid Red 94) were coated with a 3,7-bis(diethylamino)-10-trichloroacetylphenoxyazine. Sep., green particles composed of a melamine resin, Suminol Leveling Yellow NR (C. I. Acid Yellow 19), and Kayacion Green A-4G were coated with 4-(5-chloro-1,3,3-trimethylindolino)methyl-7-(N-methylamino)-5-chloro-1',3',3'-trimethylspiro[2H-1-benzopyran-(2H)indole]. And purple-colored particles composed of a melamine resin, Kayacion Turquoise Blue P-GF, and Acid Violet 6B were coated with a yellow-forming leuco dye. Then, an electrophotog. plate was charged, then honeycomb-type mosaic patterns were formed on the plate by using the above 3 different particles, the plate was then imagewise exposed by using a color original, shaken to remove some of the particles to form colored images on the plate, then the images were transferred onto clay-coated paper, heated, and the particles removed to give a colored copy.

IT 632-68-8 12225-39-7

RL: TEM (Technical or engineered material use); USES (Uses) (electrophotog. toners containing, color decomposition-type, for color images)

RN 632-68-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetrainodo-, dipotassium salt (9CI) (CA INDEX NAME)

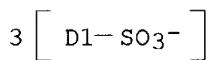
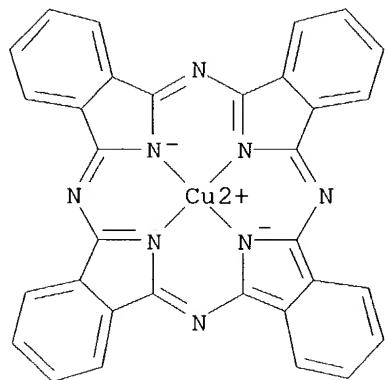


●2 K

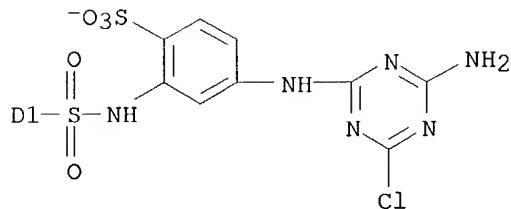
RN 12225-39-7 HCA

CN Cuprate(4-), [C-[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

● 4  $\text{Na}^+$ 

IC G03G013-22; G03G015-00

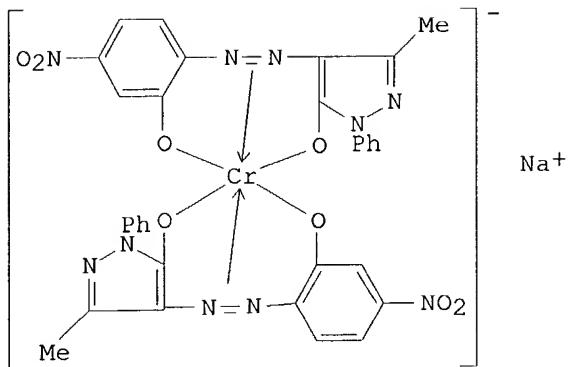
CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** and  
Other **Reprographic** Processes)IT 547-58-0 **632-68-8** 1694-09-3 9003-08-1 12220-64-3**12225-39-7** 12225-74-0 70639-87-1 89810-68-4RL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. toners containing, color decomposition-type, for color  
images)

L113 ANSWER 23 OF 26 HCA COPYRIGHT 2004 ACS on STN

96:105793 Solubilizing dyes. (Hoya Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
56110767 A2 19810902 Showa, 10 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1980-12054 19800205.

GI



AB Metal complex, Cu phthalocyanine, and acid dyes were solubilized in paraffin solvents by ethoxylated C12-18 alkanamines. For example, a dispersion of 40 parts I [64560-69-6] in 100 parts octane was stirred with 80 parts C18H37N[(CH<sub>2</sub>CH<sub>2</sub>O)<sub>6</sub>H]<sub>2</sub> [26635-92-7] for 1 h and freed from octane to give a composition having solubility 250 weight parts/100 volume parts

2-methyloctane, compared with 0.001 weight part for neat I.

IT 4372-02-5 62611-78-3 62611-90-9  
63267-48-1 64599-23-1 64614-13-7

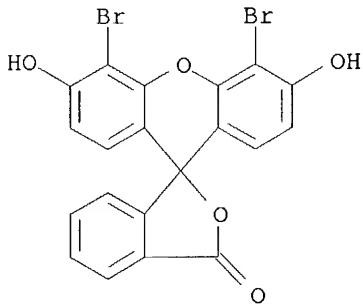
65584-98-7

RL: USES (Uses)

(solubilizers for, ethoxylated alkanamines as)

RN 4372-02-5 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4',5'-dibromo-3',6'-dihydroxy-, disodium salt (9CI) (CA INDEX NAME)

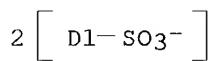
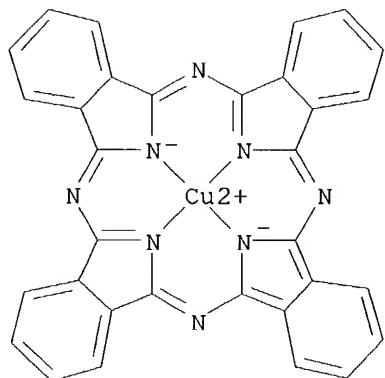


●2 Na

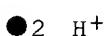
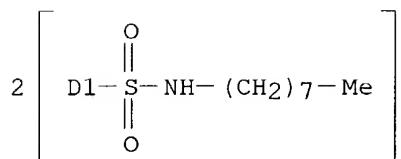
RN 62611-78-3 HCA

CN Cuprate(2-), [C,C-bis[(octylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, dihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



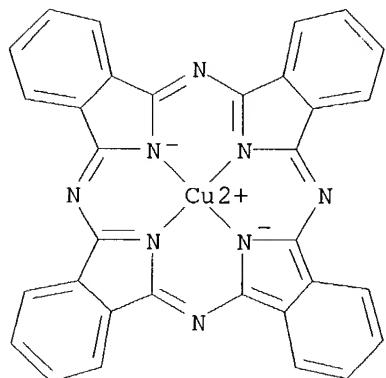
PAGE 2-A



RN 62611-90-9 HCA

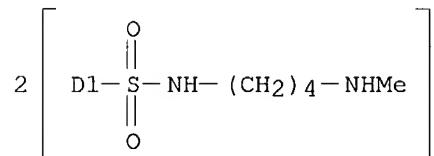
CN Cuprate(1-), [C,C-bis[[[4-(methylamino)butyl]amino]sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)-N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



D1- SO3-

PAGE 2-A

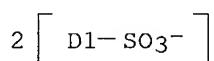
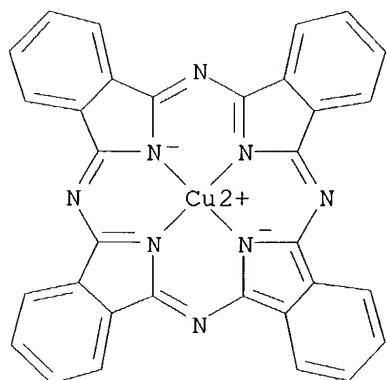


● H+

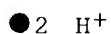
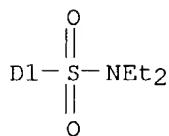
RN 63267-48-1 HCA

CN Cuprate(2-), [C,C-bis[(diethylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)N29,N30,N31,N32]-, dihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



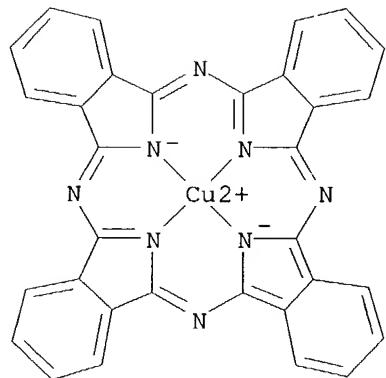
PAGE 2-A



RN 64599-23-1 HCA

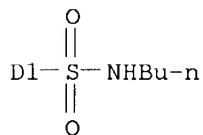
CN Cuprate(1-), [C-[(butylamino)sulfonyl]-29H,31H-phthalocyanine-C-sulfonato(3-)N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



D1-SO3-

PAGE 2-A

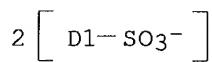
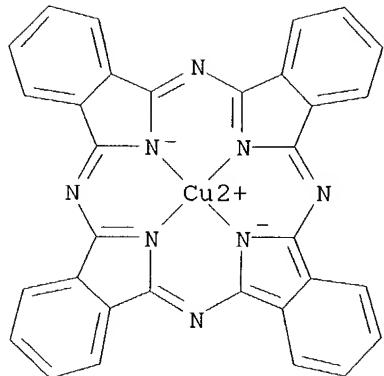


● H+

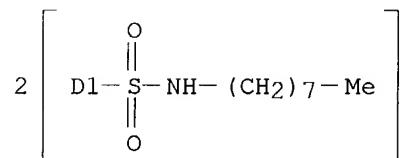
RN 64614-13-7 HCA

CN Cuprate(2-), [C,C-bis[(octylamino)sulfonyl]-29H,31H-phthalocyanine-C,C-disulfonato(4-)-N29,N30,N31,N32]-, disodium (9CI) (CA INDEX NAME)

PAGE 1-A



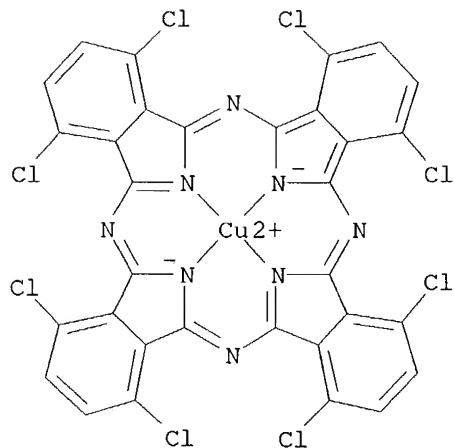
PAGE 2-A

●2 Na<sup>+</sup>

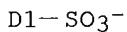
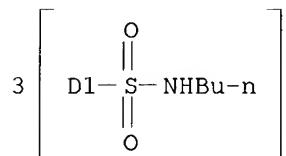
RN 65584-98-7 HCA

CN Cuprate(1-), [C,C,C-tris[(butylamino)sulfonyl]-1,4,8,11,15,18,22,25-octachloro-29H,31H-phthalocyanine-2-sulfonato(3-)N29,N30,N31,N32]-, hydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC C09B067-44  
 CC 41-3 (Dyes, Fluorescent Brighteners, and **Photographic**  
 Sensitizers)  
 IT 860-22-0 1694-09-3 2861-02-1 **4372-02-5** 6408-59-9  
 25317-17-3 41741-86-0 **62611-78-3** **62611-90-9**  
 63267-41-4 **63267-48-1** 63388-90-9 64560-69-6 64560-71-0  
 64560-72-1 64596-65-2 **64599-23-1** **64614-13-7**  
**65584-98-7** 65595-45-1 72906-53-7 80156-92-9 80164-71-2  
 80164-88-1 80191-50-0 80261-62-7  
 RL: USES (Uses)  
 (solubilizers for, ethoxylated alkanamines as)

L113 ANSWER 24 OF 26 HCA COPYRIGHT 2004 'ACS on STN  
 93:213344 Electrophotographic negative-positive reversal imaging process.  
 (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho  
 JP 55057853 19800430 Showa, 6 pp. (Japanese). CODEN: JKXXAF.  
 APPLICATION: JP 1978-130698 19781023.

AB An electrophotog. plate is charged, then coated (electrostatically) with

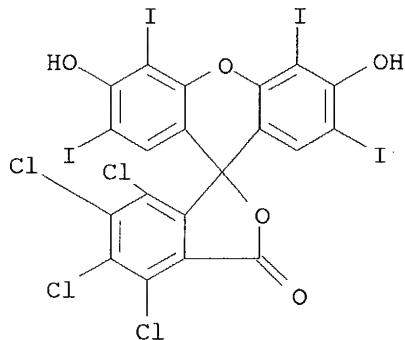
light-transmitting particles, then the coated plate is imagewise exposed through a neg., the particles on the exposed area are removed, then the particle images remaining on the plate is transferred to a receptor having mirror like surface or black surface, and the receptor sheet is exposed to white light to give pos. images. The method can be used for black-and-white or color electrophotog. reversal process. Thus, glass powder coated with SnO<sub>2</sub> was spread on a charged Se electrophotog. plate, the plate was imagewise exposed, then the glass powder on the exposed area were removed by shaking to give particle images which were observed as white images (on black background) when a white light was used to observe scattered light from the plate.

IT 632-68-8 12225-39-7

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrophotog. toners containing, for reversal process)

RN 632-68-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 4,5,6,7-tetrachloro-3',6'-dihydroxy-2',4',5',7'-tetrainodo-, dipotassium salt (9CI) (CA INDEX NAME)

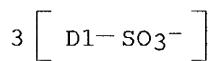
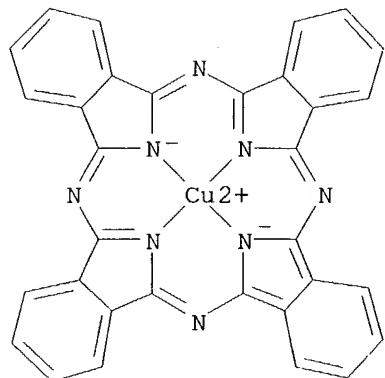


●2 K

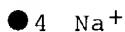
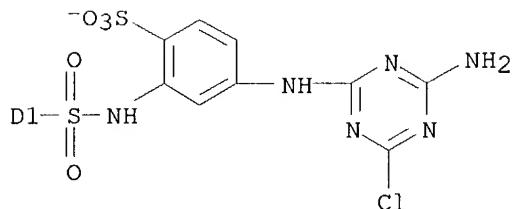
RN 12225-39-7 HCA

CN Cuprate(4-), [C-[[[5-[(4-amino-6-chloro-1,3,5-triazin-2-yl)amino]-2-sulfophenyl]amino]sulfonyl]-29H,31H-phthalocyanine-C,C,C-trisulfonato(6-)-κN29,κN30,κN31,κN32]-, tetrasodium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC G03G013-01; G03G015-01  
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic Processes**)  
 IT 547-58-0 **632-68-8** 1335-23-5 1694-09-3 9003-08-1  
**12225-39-7** 12225-74-0 12239-15-5 18282-10-5  
 RL: TEM (Technical or engineered material use); USES (Uses) (electrophotog. toners containing, for reversal process)

L113 ANSWER 25 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 92:50066 Multicolor electrophotographic process. Inoue, Satoru; Katagiri, Nobuyuki (Ricoh Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP-54009929 19790125 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1977-74489 19770624.

AB In carrying out multicolor electrophotog. process, a colored toner containing a dye which decolors upon thermal reaction and another colored toner containing a component which reacts with the dye in the 1st toner upon heating are used so that the color of overlapped area can be changed during the thermal fixing. Optionally, the 1st toner contains a compound which forms a

color upon thermal reaction and the 2nd toner contains a compound which reacts with the color former in the 1st toner upon heating. The method is especially useful for eliminating the color-mixing of the overlapped areas. Thus, a Se electrophotog. plate was exposed through a black-and-red original and a red filter, then developed by using a black toner consisting of styrene resin 100, carbon black 7, and crystal violet lactone 5 parts, and the toner images were transferred to a receptor paper. Subsequently, the Se plate was imagewise exposed without the filter, developed by using a toner consisting of styrene resin 100, Permanent Red F5R 7 and **Bisphenol A** 5 parts, and the red images were transferred to the receptor sheet, and the receptor sheet was heated to give a copy with pure black images and red images. When crystal violet lactone and **Bisphenol A** were not used, reddish-black images were obtained in the overlapped areas.

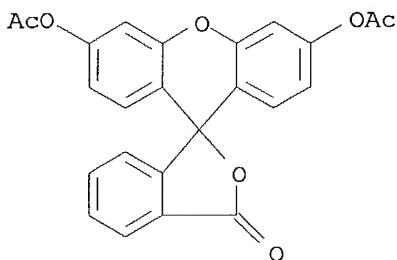
IT 596-09-8D, reaction products with diphenylguanidine  
67340-41-4

RL: USES (Uses)

(electrophotog. color toners containing)

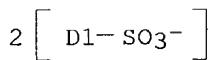
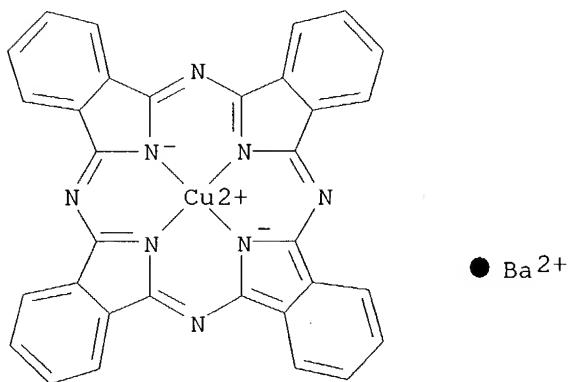
RN 596-09-8 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-bis(acetyloxy)- (9CI) (CA INDEX NAME)

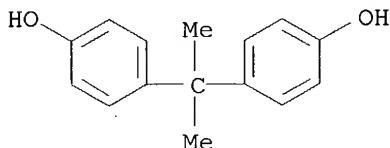


RN 67340-41-4 HCA

CN Cuprate(2-), [29H,31H-phthalocyanine-C,C-disulfonato(4-) -  
κN29,κN30,κN31,κN32]-, barium (1:1) (9CI) (CA  
INDEX NAME)



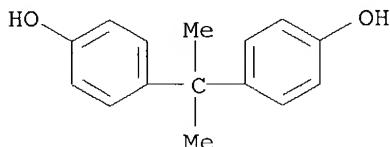
IT **80-05-7**, uses and miscellaneous  
 RL: USES (Uses)  
 (electrophotog. color toners containing, for automatic color correction)  
 RN 80-05-7 HCA  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IC G03G013-01  
 CC 74-3 (Radiation Chemistry, Photochemistry, and **Photographic** Processes)  
 IT Photography, electro-, color  
 (automatic color corrections in, by Crystal Violet lactone-  
**Bisphenol A** thermal reaction)  
 IT 102-06-7D, reaction products with **diacetoxyluorane**  
**596-09-8D**, reaction products with diphenylguanidine 3564-21-4  
 5281-04-9 **67340-41-4**  
 RL: USES (Uses)  
 (electrophotog. color toners containing)  
 IT **80-05-7**, uses and miscellaneous 1552-42-7  
 RL: USES (Uses)  
 (electrophotog. color toners containing, for automatic color correction)

L113 ANSWER 26 OF 26 HCA COPYRIGHT 2004 ACS on STN  
 89:207310 Thermochromic materials. Nakasugi, Norikazu; Kataoka, Takashi;  
 Inagaki, Hiroshi; Nakashima, Sunao (Pilot Ink Co., Ltd., Japan). Can. CA  
 1025200 19780131, 68 pp. (English). CODEN: CAXXA4. APPLICATION: CA  
 1973-181341 19730918.

AB Thermochromic compns. are comprised of an electron-donating, chromatic organic compound, a compound having a phenolic hydroxyl group, and a compound selected from the group consisting of higher aliphatic monovalent alcs. and acid alc. esters. The thermochromic compns. are suitable for preparing paints, writing and printing inks, temperature-indicating devices, and thermooptic displays. Thus, Crystal Violet lactone 1, **Bisphenol A** 1, and lauryl alc. 25 parts were mixed at 80-90° with agitation to give a thermochromic material. The material showed a blue color at ≤15° and underwent a reversal color change to colorless when heated above that temperature  
 IT **80-05-7**, properties  
 RL: PRP (Properties)  
 (thermochromic compns. containing electron-donating organic chromatic compound,  
 aliphatic alc. and)  
 RN 80-05-7 HCA  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



IT **1328-54-7**

## RL: USES (Uses)

(thermochromic compns. containing electron-donating organic chromatic compound,

phenolic compound, aliphatic alc. and)

RN 1328-54-7 HCA

CN C.I. Solvent Blue 25 (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 26206-78-0 34342-67-1 36886-76-7

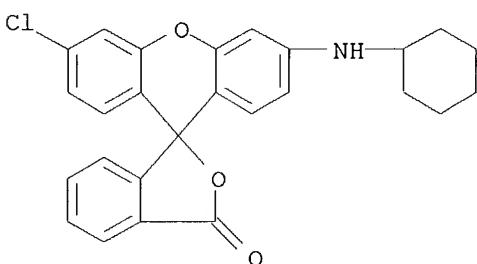
68252-92-6

## RL: USES (Uses)

(thermochromic compns. containing phenolic compound, aliphatic alc. and,)

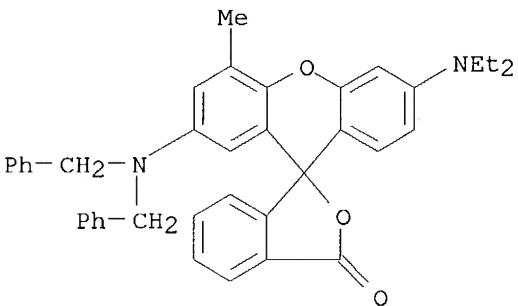
RN 26206-78-0 HCA

CN Spiro[isobenzofuran-1(3H), 9'-[9H]xanthen]-3-one, 3'-chloro-6'-(cyclohexylamino)- (9CI) (CA INDEX NAME)



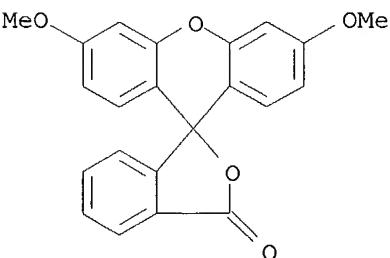
RN 34342-67-1 HCA

CN Spiro[isobenzofuran-1(3H), 9'-[9H]xanthen]-3-one, 2'-(bis(phenylmethyl)amino)-6'-(diethylamino)-4'-methyl- (9CI) (CA INDEX NAME)



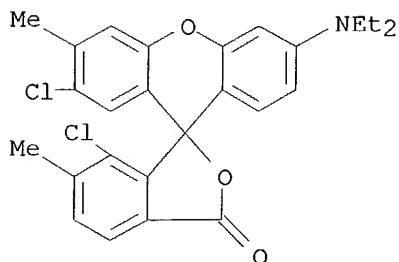
RN 36886-76-7 HCA

CN Spiro[isobenzofuran-1(3H), 9'-[9H]xanthen]-3-one, 3',6'-dimethoxy- (9CI) (CA INDEX NAME)



RN 68252-92-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',7-dichloro-6'-(diethylamino)-3',6-dimethyl- (9CI) (CA INDEX NAME)

CC 74-8 (Radiation Chemistry, Photochemistry, and **Photographic** Processes)

Section cross-reference(s): 42, 73

IT **80-05-7**, propertiesRL: PRP (Properties)  
(thermochromic compns. containing electron-donating organic chromatic compound,

aliphatic alc. and)

IT 123-28-4 **1328-54-7** 2985-59-3 26898-17-9 68053-02-1

RL: USES (Uses)

RL: USES (Uses)  
(thermochromic compns. containing electron-donating organic chromatic compound,

phenolic compound, aliphatic alc. and)

IT **26206-78-0** **34342-67-1** **36886-76-7** 68027-16-768027-17-8 **68252-92-6**

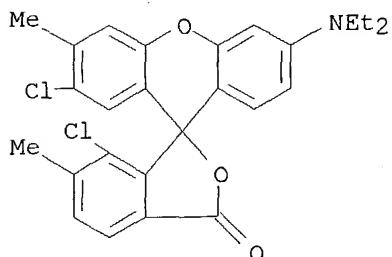
RL: USES (Uses)

RL: USES (Uses)  
(thermochromic compns. containing phenolic compound, aliphatic alc. and, )

=&gt;

RN 68252-92-6 HCA

CN Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 2',7-dichloro-6'-(diethylamino)-3',6-dimethyl- (9CI) (CA INDEX NAME)

CC 74-8 (Radiation Chemistry, Photochemistry, and **Photographic Processes**)

Section cross-reference(s): 42, 73

IT **80-05-7**, properties

RL: PRP (Properties)

(thermochromic compns. containing electron-donating organic chromatic compound,

aliphatic alc. and)

IT 123-28-4 **1328-54-7** 2985-59-3 26898-17-9 68053-02-1

RL: USES (Uses)

(thermochromic compns. containing electron-donating organic chromatic compound,

phenolic compound, aliphatic alc. and)

IT **26206-78-0** **34342-67-1** **36886-76-7** 68027-16-768027-17-8 **68252-92-6**

RL: USES (Uses)

(thermochromic compns. containing phenolic compound, aliphatic alc. and,)

=&gt;